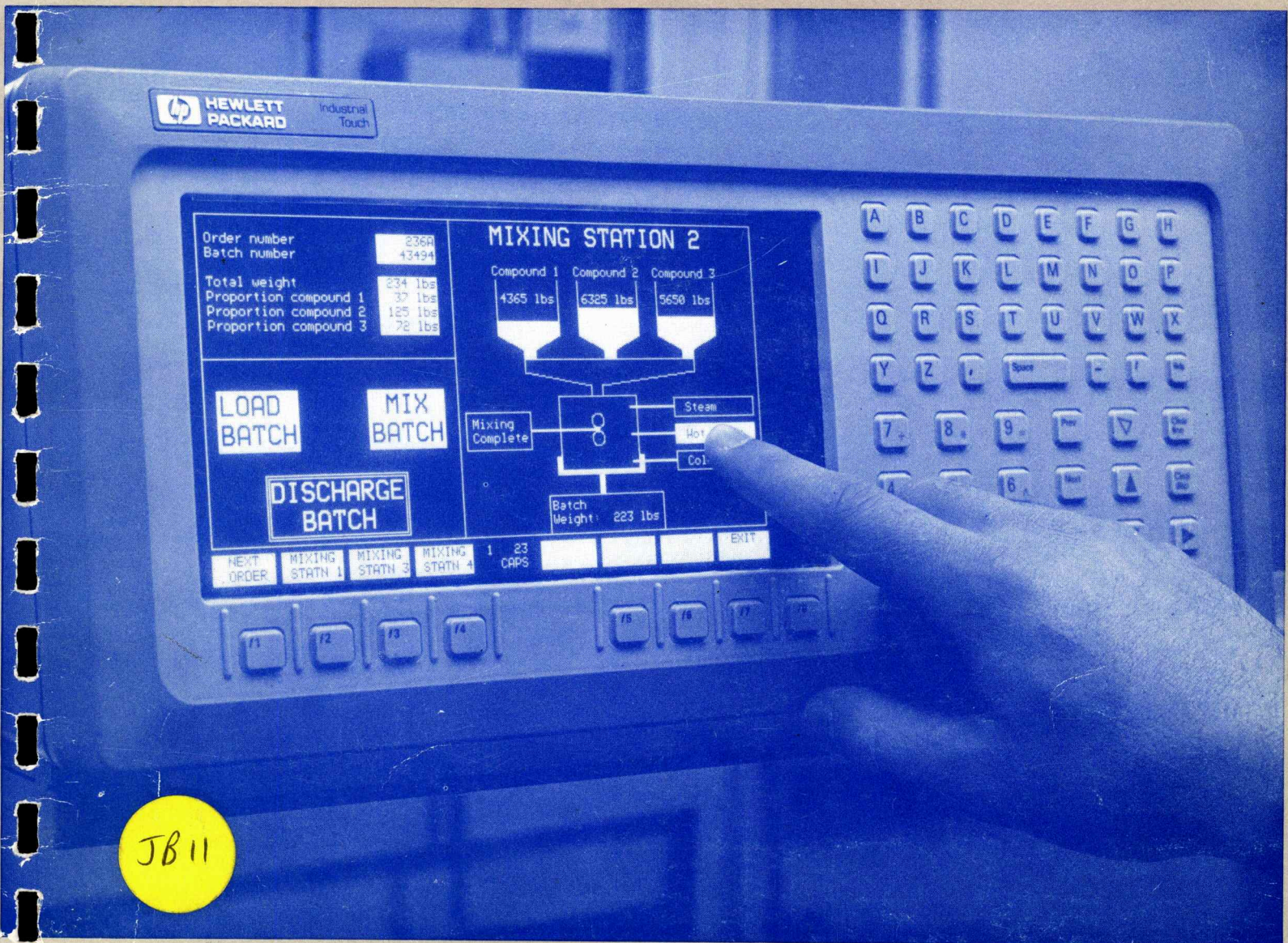


HEWLETT-PACKARD

HP 3082 A

Industrial Touch



User's and Screen Designer's Manual

**HP 3082A
INDUSTRIAL TOUCH
Display Terminal**

**User's
and
Screen Designer's
Manual**

HEWLETT-PACKARD (CANADA) LTD.

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1. Dieses Geraet ist zugelassen gemaess DIN IEC 380/VDE 0806/08.81. Beim Einbau muss die Installation gemaess der obengenannten Norm erfolgen.
2. Nenneingang: AC110/220V 1.35/0.87A 60/50Hz
3. Luftstrom ohne Luefter. Maximal zulaessige Umgebungstemperatur 50 grad C.
4. Dieses Geraet ist Ortsveraenderlich (Ableitstrom 0.75mA max.)
5. Vor Ingebrauchnahme pruefen Sie dass sich der Spannungswaehler in der der Netzspannung entsprechenden position befindet:
AC110V: 110 Position
AC220V: 220 Position
6. Nehmen Sie die Sicherung aus der Tuete mit Anschlussleitung und Installieren Sie sie in das Geraet. Sicherung muss T1.6A/250V sein.
7. Zwecks Vermeidung von Feuergefahr, nur Sicherung des gleichen Types und gleichen Wertes benutzen.

Operating and Safety Symbols

Symbols Used on Product and in Manuals



AC voltage



Fuse

Note

Calls attention to a procedure, practice, or condition that requires special attention by the reader.

Caution

Calls attention to a procedure, practice, or condition that could possibly cause damage to equipment or permanent loss of data.

Warning

Calls attention to a procedure, practice, or condition that could possibly cause bodily injury or death.

ELECTROMAGNETIC COMPATIBILITY

All types of electronic equipment are potential sources of unintentional electromagnetic radiation that may cause interference with licensed communication services. Products that utilize digital waveforms such as any computing device are particularly characteristic of this phenomena and the use of such equipment may require that special care be taken to ensure that Electromagnetic Interference (EMI) is controlled. Various government agencies regulate the levels of unintentional spurious radiation which may be generated by electronic equipment. The installer of this product should be familiar with the specific regulatory requirement in effect in his locality.

The HP 3082A has been designed and tested to the requirements of both the U.S.A. Federal Communications Commission Part 15, Subpart J (Class A) and the Federal Republic of Germany FTZ 1046/1984. Both of these specifications and the laws of many other countries require that if emissions from these products cause harmful interference with licensed radio communications, that the operator of the interference source may be required to cease operation of the product and correct the situation.

In order to reduce the risk of causing Electromagnetic Interference, it is recommended that the following measures be taken:

1. Ensure that the HP 3082 is always operated with the recommended HP connection cables. The communication cables and their hoods must be shielded.
2. Ensure that only recommended peripherals are operated with the 3082 and that they are connected in accordance with the installation instructions.

MANUFACTURER'S DECLARATION

For Operation in the United States

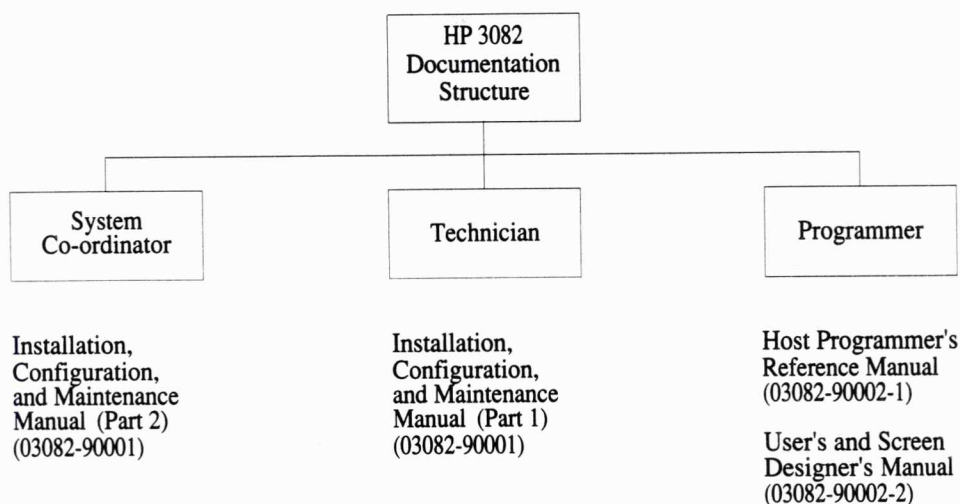
This equipment generates, uses, and can radiate radio frequency energy, and, if not installed and used in accordance with the instructions manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which is designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

For Operation in the Federal Republic of Germany

This is to certify that this product (HP 3082) meets the radio frequency interference requirements of directive FTZ 1046/1984. The German Bundespost has been notified that this equipment was put into circulation and was granted the right to check the product type for compliance with these requirements.

If this product is operated with additional cables and/or cables not specifically recommended for use with this product, the user must ensure that, under these operating conditions, the radio frequency interference limits of FTZ 1046/1984 are met at the border of his premises.

DOCUMENTATION MAP



The *Installation, Configuration, and Maintenance Manual* is shipped with the terminal. Other manual sets can be ordered under the part numbers in the table below. (Individual manuals can *not* be ordered.)

| Part Number | Manuals in Set |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3082A option 910 | <i>Host Programmer's Reference Manual</i> <i>User's and Screen Designer's Manual</i> |
| 03082-90004 | <i>Installation, Configuration, and Maintenance Manual</i> <i>Host Programmer's Reference Manual</i> <i>User's and Screen Designer's Manual</i> |

Preface

This is the *User's and Screen Designer's Manual* for the HP 3082A Industrial Touch Display Terminal. This manual is intended for programmers who will be developing applications to run on the terminal. Part 1 of this manual tells how to use the terminal to enter, edit, and communicate data. Part 2 tells how to use the terminal's built-in editors to design screens for on-line applications.

For information on controlling the terminal with escape sequences from a host computer, see the *Host Programmer's Reference Manual*. For information on installing, configuring, and maintaining the terminal, see the *Installation, Configuration, and Maintenance Manual*.

Part 1 Operating the Industrial Touch

Chapter 1 Introduction to the Terminal

Chapter 1 introduces you to the display screen and keypad of the terminal, as well as the external keyboard and other input devices that may be used with it. Chapter 1 also tells how the Industrial Touch emulates the Hewlett-Packard HP 2392A terminal and the DEC VT100 and VT52 terminals.

Chapter 2 Entering and Editing Data

Chapter 2 tells you how to use the terminal keypad or the optional external keyboard to enter and edit data. It also explains such operations as generating control characters and escape sequences and applying video enhancements.

Chapter 3 Communicating with the Host Computer

Chapter 3 tells you how to use the Industrial Touch to communicate with host computers in Character Mode, Block Mode, and Forms Mode. In Character Mode, data is sent to the host as you enter it. In Block Mode, you can enter and edit up to four pages of data before sending it to the host. In Forms Mode, data can be entered only in certain fields of a form displayed on the screen, and cursor movements guide data entry.

Chapter 4 Printing Data and Passing Data between the Host and External Devices

Chapter 4 tells you how to copy selected data from the display to a printer, how to log data automatically from the screen to a printer, and how use the terminal to pass two-way communications between the host and external devices such as the HP 48000 Remote Terminal Unit.

Part 2 Designing Screens with the Industrial Touch

Chapter 5 Introduction to the Screen Editors

Chapter 5 tells you what each of the screen editors does and how you can use them to design data-entry screens much more quickly than with conventional character graphics. This chapter explains how to operate the editors with the screen-labelled function keys, how to apply video-enhancements to the features you draw, and how to use the HP Mouse to make screen design even faster.

Chapter 6 Designing a Data-Entry Form with the Forms and Fields Editors

Chapter 6 tells you how to use the Industrial Touch Forms and Fields editors to design screens that resemble paper data-entry forms, with data-entry fields set in a line grid.

Chapter 7 Designing Touch Targets with Touch Editor

Chapter 7 tells you how to use the Touch Editor to design touch targets: screen areas that enable terminal operators to send information to the host simply by touching them. Where earlier methods of designing touch targets required you to write lengthy escape sequences, the Touch Editor lets you create multiple targets in seconds.

Chapter 8 Designing Process Graphic Diagrams with Graphics Editor

Chapter 8 tells you how to use the Graphics Editor. This editor lets you assemble special graphics characters into process graphic symbols and then manipulate these symbols on screen to form process graphic diagrams.

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PART 1
Operating the HP 3082

Introduction to the Terminal

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1.1 Overview

The HP 3082 is a sealed industrial terminal with a 9-inch flat-panel display and a built-in alphanumeric keypad. This terminal can accept input from a variety of sources and can send output to any RS-232 device. It can communicate with host computers in Character or Block Mode, and is compatible with the HP 2392A, DEC VT100, and DEC VT52 terminals. The HP 3082 has built-in, softkey-driven editors to simplify screen and forms design, configuration menus to simplify system integration, and self-tests to simplify troubleshooting.

Entering and Editing Data

To make entering data easier for operators not used to computer keyboards, the letters on the built-in keypad are laid out in alphabetic order. The numbers are arranged as on a calculator. All keys click noticeably when properly pressed.

For the factory floor, the HP 3082 provides several optional input devices as well. With the touchscreen option, operators can send information to the host simply by touching predefined softkey labels and touch targets on the display. Operators may also use barcode wands, slot readers, or laser scanners, as the application requires.

For less rugged environments and for application development, data can also be entered into the terminal through a separate HP keyboard or an HP Mouse connected to its HP-HIL (Human Interface Loop) port. The keyboard has several keys that provide editing and communication-control functions not available on the keypad.

Communicating Data

To make it compatible with a variety of computing environments, the HP 3082 can be configured to emulate an HP 2392A, a DEC VT100 (ANSI), or a DEC VT52 terminal.

When emulating an HP 2392A, it can transmit data a character at a time as it is entered (Character Mode), or it can transmit data in blocks of one line or one page (Block Mode). Whichever of these modes is in use, the terminal can at the same time be placed in a special Forms Mode. In this mode, you can enter data only in predefined fields, and the cursor and beeper guide you through the process.

When emulating a DEC VT100 or VT52 computer, the HP 3082 operates in Character Mode only. (Block Mode and Forms Mode are not available.)

Sending and Passing Data

The HP 3082 lets you send data to printers and other external devices. A special passthrough mode permits two-way communications between the host and external devices such as remote monitoring and control units without intervention by the terminal.

Designing Screens

As an aid to application developers, the HP 3082 provides a set of four built-in screen editors that greatly streamline the process of designing screens and forms. These softkey-driven editors let you draw lines, fields, touch targets, and process-graphic symbols on the screen with the cursor keys or an HP Mouse: no more tedious keying in graphics characters and escape sequences. To design screens with these editors, you can use the keypad alone, but an external keyboard and the HP Mouse are recommended.

Configuring the Terminal

The softkey-driven configuration menus built into the HP 3082 make it easy to configure the terminal for the environment in which you will be using it. Characteristics you configure include data-communication parameters and the type of terminal your terminal will be emulating. To prevent unauthorized persons from altering the terminal's configuration, you can block access to these menus.

For full details on how to configure your terminal using these screens, see the *Installation, Configuration, and Maintenance Manual*.

Self-tests

The HP 3082 includes a set of built-in self-tests to help locate faults if it isn't operating properly. A subset of these tests is run automatically every time you turn the terminal on. You can run the full set by means of the function keys on the keypad. For detailed instructions, see the *Installation, Configuration, and Maintenance Manual*.

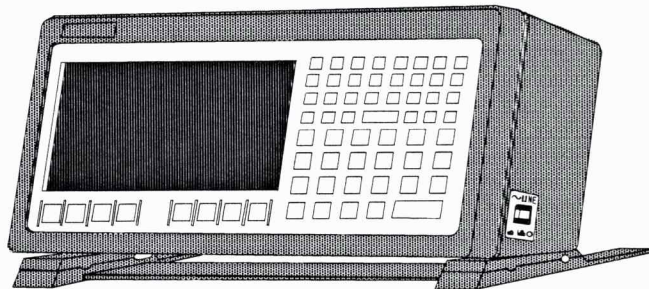


Exhibit 1.1. The HP 3082A HP 3082 Display Terminal

1.2 The Display Screen

The display screen contains 28 lines or rows divided into a 24-line display window, where the user or host displays data, and a message window, where the terminal displays error messages, softkey labels, and information on the terminal's operating status.

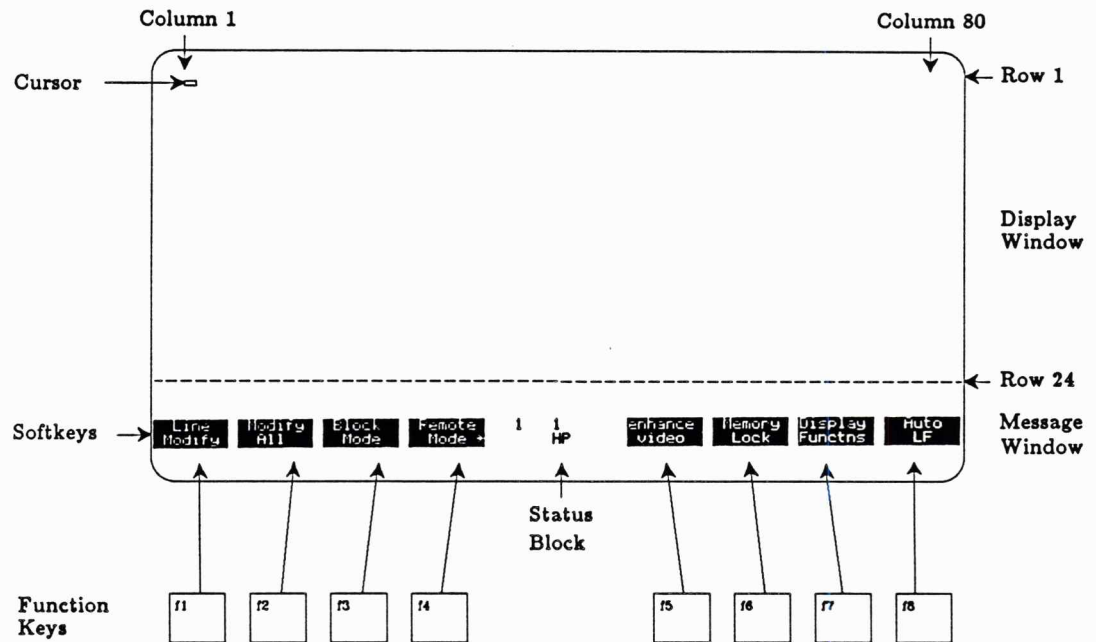


Exhibit 1.2a. The Display Screen of the HP 3082

Display Window

The display window consists of the top 24 lines of the display screen, shown in Exhibit 1.2a above. The display window is where the user can enter data or design screens and where data and screens can be displayed by the host. This window is 80 columns wide.

All information appearing in the display window is also stored in display memory. When the terminal is configured to emulate an HP 2392A terminal, or a DEC VT100 or VT52 terminal in Multipage mode, display memory can hold up to 96 lines of data at a time.

Any area in the display window can be defined as a touch target (see chapter 7). The window can hold up to 32 touch targets.

Message Window

The message window consists of the bottom four rows of the screen. It contains

- a message area
- softkeys
- a status block in the bottom center of the screen.

Message Area

The message area is located on lines 25 and 26. It displays error messages, as well as options used with the built-in screen editors.

Softkeys

The softkeys are located on lines 27 and 28 of the display. These eight labelled boxes show the functions currently available from function keys **f1** to **f8** on the keypad and keyboard. For more details on softkeys, see sections 2.3.1 and 2.3.2.

Status Block

The status block lies between the two groups of softkeys at the bottom of the screen. It displays information on the the terminal's current operating status. Exhibit 1.2b summarizes the kinds of information displayed in the status block.





Exhibit 1.2b. Meaning of Information Displayed in the Status Block

| Status | Meaning |
|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| HP | Terminal is operating in HP emulation mode. |
| ANSI | Terminal is operating in VT100 emulation mode. |
| EM52 | Terminal is operating in VT52 emulation mode. |
| 12 35 | Cursor is at line 12 and column 35. |
| | Data from the host is coming into the datacomm port. |
| Caps | The Caps key on the external keyboard is engaged. All alphabetic keys generate capital letters when not shifted and lower-case letters when shifted. |
| Ins | Insert mode is on. |
| STOP | The Stop key on the external keyboard has been engaged to halt data flow to the screen. |
| KbLock | All input devices are locked out. |


1.3 The Keypad

The keypad built into the HP 3082 is the primary device for entering alphanumeric data on the factory floor. To help operators not used to computer keyboards, the letters are arranged in alphabetical order. For detailed instructions on using the keys mentioned here, see section 2.4.


Layout

The keypad built into the front of the HP 3082 contains four groups of keys, plus the , , , and  keys.

Alphabetic Group

The alphabetic keys normally generate uppercase letters. To generate a lowercase letter, first press the  key, then the desired letter.




Numeric Pad Group

The number keys are arranged as on a calculator to make entering numbers easier. To enter the blue character on the bottom-right corner of any number key, press the  key, then the number key.

Function Key Group

These keys trigger the softkeys that are currently displayed in the labelled boxes on the bottom of the screen.

Display Control Group

These keys move the cursor around the screen and clear display areas. The  and  keys act as Tab and Back Tab keys, respectively, while the  generates a carriage return.

 Help

This key displays the **Beeper Control Menu**, used to adjust the volume, tone, and duration of the terminal beeper, as well as to turn the touchscreen option on and off.





This key returns the display to the **System Menu** from whichever softkey menu is currently on screen.

 Send

This key sends the host blocks of data that are already displayed on the screen.



The blue  key shifts the alphabetic keypad keys to lowercase letters and the numeric keys to their blue symbols. It also invokes the User softkeys, and is used with the  to generate a break.

Differences from Keyboard

As noted above, the built-in keypad is designed for entering alphanumeric data *on the factory floor*. For application development, and for extensive alphanumeric data entry in controlled environments, the optional external keyboard described in the next section is recommended instead.

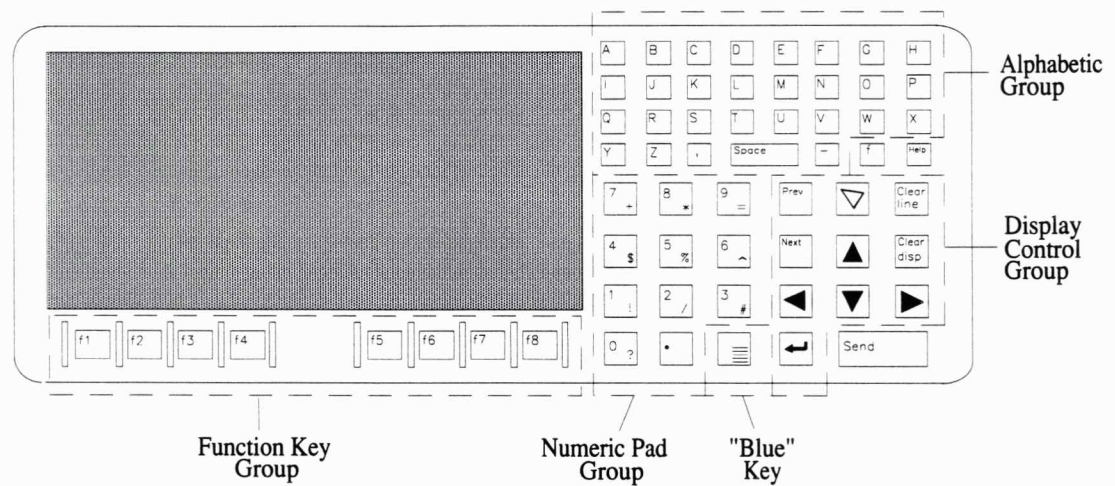


Exhibit 1.3. The Keypad of the 3082A

1.4 The Optional External Keyboard

When the HP 3082 is not going to be used on the factory floor, but rather for developing applications or for entering large volumes of alphanumeric data in controlled environments, the optional external keyboard is recommended. This keyboard has a conventional typewriter-style layout, and provides several editing, data-communication, and other functions not available on the keypad. It plugs into the HP-HIL port at the rear of the terminal.

Layout

The optional external keyboard comes in layouts for 17 different languages. The USASCII keyboard is shown in Exhibit 1.4, the others in appendix B. All layouts contain the same basic groups of keys. (For instructions on using any of the keys described below, see the appropriate sections of chapter 2.)

Alphanumeric Group

Unlike the alphanumeric keys on the keypad, those on the keyboard generate lowercase letters unless the **Shift** or **Caps** key has been pressed or the Caps Lock feature has been selected during configuration.

Numeric Pad Group

The numeric pad includes 4 mathematical operator symbols in addition to the number keys. The functions of the **Enter** and **Tab** keys in this group depend on whether the terminal is in HP mode, VT100 mode, or VT52 mode. In VT100 and VT52 modes, the entire group can be reconfigured for application-specific functions.

Cursor Control Group

The arrow keys move the cursor around the screen. In HP mode only, holding down the **Shift** key while pressing these keys lets you scroll text up, down, left, and right in the display window. In VT100 mode only, the arrow keys can be reconfigured for application-specific functions.

Edit Control Group

These six keys are used to insert and delete lines and characters on the display. The **Clear line** and **Clear display** keys clear data from the cursor position to the end of the line and to the end of display memory, respectively. The **Insert line**, **Delete line**, **Insert char**, and **Delete char** keys work only in HP mode.

Function Key Group

This group contains the eight functions keys plus the **User System** and **Menu** keys:

- The function keys, **f1** to **f8**, are used to trigger the System or User softkeys currently displayed on the screen.
- The **User System** and **Menu** keys are used to display the **System Menu** (see section 2.3.1) and the User softkeys (see section 2.3.2).

Ungrouped Keys

The keys not included in any of the groups in Exhibit 1.4 perform various functions described at the appropriate points in this manual. To locate the description of an individual key, consult the index.

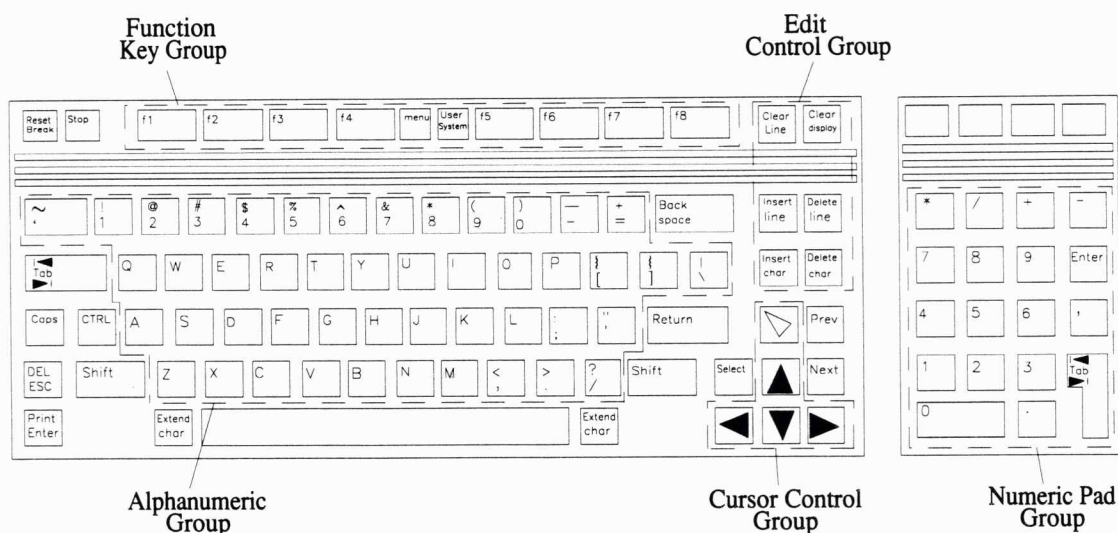


Exhibit 1.4. Standard USASCII Keyboard for the 3082A

1.5 Auxiliary Input and Output Devices

The HP 3082 can accept input not only from the built-in keypad, but also from the devices shown in Exhibit 1.5: the optional touchscreen, a variety of barcode devices, an external HP-HIL keyboard, or an HP Mouse. The terminal can also communicate with printers and other RS-232-C compatible devices.

Touchscreen Option

The touchscreen option lets operators enter data, trigger softkeys, and perform other operations by touching predefined targets on the screen. Before using the touchscreen, you must press **Help** on the keypad and ensure that the **[Touch On]** softkey is engaged (as indicated by an * on the softkey label).

The firmware of every HP 3082 terminal includes a Touch Editor that lets you define touch targets for on-line applications quickly and easily (see chapter 7). You can also define touch targets on the terminal by sending escape sequences from the host (see the *Host Programmer's Reference Manual*).

If the touchscreen option is desired, it must be ordered at the same time as the terminal; it cannot be added on afterward.

Barcode Devices

The HP 3082 terminal can accept input from the following barcode devices:

- HP Smart Wands, Metal Wands, and Plastic Wands
- HP Industrial Slot Readers
- the HP-HIL Barcode Wedge
- the Symbol Technologies LS-7000-II Hand Held Laser Scanner.

Ports for these devices are provided at the rear of the terminal.

Note

-
- All HP 3082 terminals can accept input from the HP-HIL Barcode Wedge. HP Smart Wands are intended for HP 3082 terminals purchased *without* the Internal Bar Code Decoding Option. To use the other devices listed above, you must order the Internal Bar Code Decoding Option when ordering the terminal.
 - Before the terminal can process barcode input, you may have to make changes on the Barcode Configuration Menu. For details, see section 5.6 of the *Installation, Configuration, and Maintenance Manual*.
-

HP Mouse

When you are designing application screens with the built-in editors, you can use the HP Mouse to select softkeys and features quickly. You connect the mouse either directly into the HP-HIL port on the back of the terminal or into the external HP-HIL keyboard. For more details on using the HP Mouse with the built-in editors, see section 5.2.

Printers and Other RS-232-C Devices

The Auxiliary Port (Port 2) of the HP 3082 is a two-way RS-232-C interface. It is typically connected to a printer, but can also be connected to any data-acquisition or output device that uses asynchronous ASCII communications. Chapter 4 of this manual gives details on using auxiliary devices with Port 2 of the terminal. For details on configuring this port, see chapter 5.2 of the *Installation, Configuration, and Maintenance Manual*.

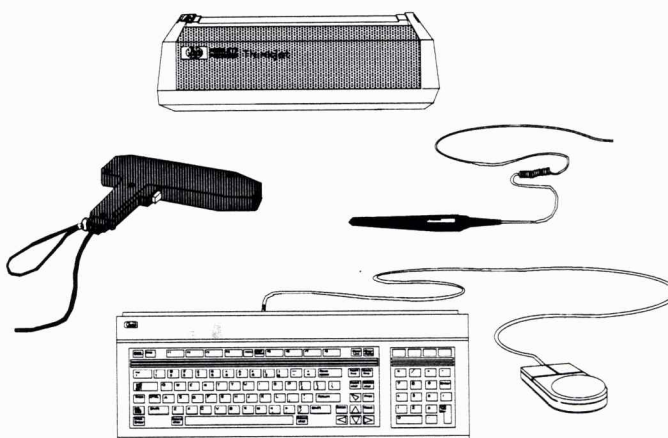


Exhibit 1.5. Input and Output Devices for the HP 3082

Note

For part numbers of any of the devices discussed in this section, see the Technical Data Sheet for the HP 3082 (HP Publication No. 5953-7034).

1.6 Emulation of the HP 2392A Terminal

When configured to emulate an HP 2392A terminal, the HP 3082 reproduces virtually all the features of this terminal, with a number of significant enhancements. Because it recognizes and executes the escape sequences specific to the HP 2392A, the HP 3082 supports applications written for that terminal. For details on configuring the HP 3082 to emulate an HP 2392A, see sections 5.2 and 5.3 of the *Installation, Configuration, and Maintenance Manual*. For details on how the HP 3082 works with HP 2392A escape sequences, see the *Host Programmer's Reference Manual*.

Differences in Default Configuration Values

For certain configuration parameters, the HP 3082 has different default values from the HP 2392A.

| | HP 3082 | HP 2392A |
|-----------------------|----------|----------|
| Baud Rate | 9600 | 2400 |
| Receive Pacing | XON/XOFF | None |
| Terminal ID | 3082A | 2392A |
| Margin Bell | Off | On |

Mechanical Differences

The following table lists mechanical differences between the HP 3082 and the HP 2392A.

| | HP 3082 | HP 2392A |
|-----------------|---------------------------------------------|-------------------------------|
| Keyboard | HP-HIL keyboard | HP 2392 special keyboard |
| Ports | Host Port (Port 1) does not support a modem | Host port supports a modem |
| | 9-pin auxiliary port (Port 2) | 25-pin auxiliary Port |
| | RS-422 or RS-232 | RS-232 only |
| | Ports 1 and 2 not interchangeable | Ports 1 and 2 interchangeable |

Operating Differences

The following table summarizes the differences between the ways the HP 3082 and the HP 2392A operate. Most of these differences represent enhanced capabilities built into the HP 3082.

| | HP 3082 | HP 2392A |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Display | 80- or 132-column operation Delayed screen updating No Smooth Scrolling Oversized characters Process-graphics characters Built-in screen-design editors Half-bright and bold mapped to other attributes | 80-column only Immediate screen updating Smooth Scrolling selectable not available not available not available Half-bright and bold attributes displayed |
| Communication | Record Mode provides two-way communication between Host Port and Auxiliary Port Pixel-dump graphics printing selectable Stop bit control (1 or 2) Baud rates: 75 to 19,200 Permits any combination of parity with 7 or 8 data bits (Stop) key causes XON/XOFF to be sent regardless of host port configuration | Record Mode provides communication only from Host Port to Auxiliary Port not available Preset operation Baud rates: 110 to 19,200 Limited options (Stop) key causes XON/XOFF to be sent only if configured for XON/XOFF Receive Pacing |

Use of Escape Sequences

The HP 3082 executes most of the escape sequences used on the HP 2392A. For touchscreen control, it supports a subset of the escape sequences used on the HP 2393A Graphics Terminal. The HP 3082 also has a large number of "private" escape sequences that control functions not available on the HP 2392A.

For full details on escape sequences, see the *Host Programmer's Reference Manual*.

1.7 Emulation of DEC VT100 and VT52 Terminals

When configured to emulate a DEC VT100 or DEC VT52 terminal, the HP 3082 reproduces almost all the features of that terminal. Because it recognizes and executes the escape sequences specific to the DEC terminal it is emulating, the HP 3082 can support most applications written for it. For details on configuring the terminal to emulate a DEC VT100 or VT52, see sections 5.2 and 5.3 of the *Installation, Configuration, and Maintenance Manual*. For details on how the terminal works with DEC VT100 and VT52 escape sequences, see the *Host Programmer's Reference Manual*.

Escape Sequences Recognized

When emulating a DEC VT100 terminal, the HP 3082 recognizes and executes

- DEC VT100 escape sequences
- HP escape sequences used in ANSI mode on an HP 2392A terminal
- HP 3082 private escape sequences.

The HP 3082 *does not* support certain non-VT100 DEC escape sequences that the HP 2392A does support in ANSI mode.

When emulating a DEC VT52 terminal, the HP 3082 recognizes and executes only VT52 escape sequences.

For details on the escape sequences used by the terminal in VT100 or VT52 mode, see the *Host Programmer's Reference Manual*.

Main Features

In VT100 or VT52 mode, the terminal has the following features:

- The keyboard is re-configured to match a DEC keyboard, as described in section 2.5.2.
- Data can be transmitted only in Character Mode, one character at a time (the **[Block Mode]** softkey on the **modes** menu is disabled).
- The VT100 line-drawing character set becomes available.
- A number of DEC-specific options can be selected on the **Terminal Configuration Menu** (see below).

Configuration Options

When you select one of the DEC emulation modes, you can select the following DEC-specific features on the **Terminal Configuration Menu**:

- You can specify an Answerback Message that the terminal will use in

Differences between DEC and HP 3082A Operations

response to an "ENQ" signal from the host.

- You can enable "Multi-page" to give you approximately 96 lines of Display Memory rather than the default 24 lines. (This feature may not be compatible with some DEC applications.)
- On the external keyboard, you can set the Back space key to
 - generate the DEL character when unshifted and move the cursor back when shifted, *or*
 - move the cursor back when unshifted and generate the DEL character when shifted.
- On the external keyboard, in both VT100 and VT52 modes, you can set the numeric keypad keys to function as "applications" keys for certain DEC applications. In VT100 mode only, you can do the same thing with the arrow keys that control the cursor.

For details on configuring the terminal for DEC emulations, see sections 5.2 and 5.3 of the *Installation, Configuration, and Maintenance Manual*.

The following features of a DEC terminal are handled differently on the 3082A:

- The 3082A cannot display 132 columns at once. It scrolls to display columns 48 to 132 or columns 1 to 80.
- Bold Intensity is not available on the 3082A's screen. You can, however, use the **Global Configuration** menu to map Bold Intensity onto any one or any combination of the following video attributes: normal, inverse, blinking, and underlined. (See section 5.2 of the *Installation, Configuration, and Maintenance Manual* for details.)
- The display does not provide Smooth Scrolling; if the terminal receives the associated escape sequences, it ignores them.

Entering and Editing Data


| | |
|-------------------------------------------------------------|------|
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| 2.2 Turning On, Adjusting, and Resetting the Terminal | 2-4 |
| 2.3 Display Screen Settings | 2-6 |
| 2.3.1 System Softkeys | 2-8 |
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2.1 Overview

In many of the environments for which the HP 3082 is designed, the built-in touchscreen option and external barcode devices will be the preferred means of data entry. But the HP 3082 can also be used as a full-featured alphanumeric data-entry terminal. Alphanumeric data can be entered either at the built-in keypad or at an optional external keyboard, which provides some additional features. Some aspects of data entry and editing depend on how the terminal has been configured and what data-communication mode is being used.

Keypad and Keyboard Applications

This chapter explains how to use not only the keypad built into the HP 3082, but also the optional external keyboard. The intended applications of these two input devices are different.

The terminal keypad is designed for easy use on the factory floor. To help operators not used to conventional keyboards, the letters are arranged in alphabetical order. To provide tactile feedback, the keys snap down and back when pressed. Unless the blue  key is pressed before each keystroke, the keypad generates capital letters only.

When the terminal is to be used off the factory floor, either for developing applications or for entering and editing large volumes of alphanumeric data, the optional external keyboard is more convenient. This keyboard provides several additional keys for inserting and deleting data, as well as some special keys for data communications. It also generates lowercase and capital letters in the conventional way.

Effects of Configuration

The keypad, keyboard, and display of the HP 3082 work differently, depending on whether the terminal has been configured to emulate an HP 2392A terminal or a DEC VT100 or VT52. This chapter tells how to operate the terminal in each of the three emulations.

Several other settings on the configuration screens (Local Echo, Transmit Function, and InhDC2Hndshk, for example) can affect data entry and editing. The most important effects are noted in this manual where appropriate. For a complete discussion of all configuration settings, see the *Installation, Configuration, and Maintenance Manual*.

Configuration Requirements for Character Mode

The two basic communication modes available on the HP 3082 are Character Mode and Block Mode. The instructions that chapter 2 gives on using the keypad and keyboard apply generally to both of these modes, and to entering and editing data in Local Mode (that is, off-line). However, depending on what host computer you are using, you may have to enable Local Echo or Transmit Function to make the keypad, keyboard, and display work properly in Character Mode.

Effects of Forms Mode

When a terminal is placed in Forms Mode, the operator can enter data only in those parts of the form that have been defined as unprotected fields. Though the keypad and keyboard keys for moving the the cursor and editing data still generally work as described in this chapter, their action is confined to these fields. For specific information on how these keys work in Forms Mode, see section 3.5.

2.2 Turning On, Adjusting, and Resetting the Terminal

To turn the terminal on or off, press firmly on the switch on its right-hand side. To adjust the beeper, press the **Help** key, then use the function keys as indicated by the display. To reset the terminal if you do not have an external keyboard connected, you must turn it off and on again. If you do have an external keyboard, there are two convenient alternatives.

Powering On and Off

To turn the terminal on, press firmly on the LINE switch on the right-hand side, until it clicks twice and remains flush with the terminal's surface.

When you turn the terminal on, it

1. performs self-tests and initializations for a few seconds, then beeps
2. displays
 - the cursor, in the upper-left corner of the screen
 - the **modes** menu of softkeys if the System softkeys are enabled; User softkeys [f1] to [f8] otherwise
 - the cursor row and column position (1, 1) and the terminal that the HP 3082 is currently configured to emulate ("HP" = HP 2392A; "ANSI" = DEC VT100; "EM52" = DEC VT52)

The rest of the screen is blank.

If the terminal does not follow the above sequence, but fails to beep or to display the screen as described above, consult chapter 4 in the *Installation, Configuration, and Maintenance Manual*.

To turn the terminal off, press the LINE switch again. On release it will protrude from the terminal.

Caution

When you turn the terminal off, any data stored in display memory is lost, and the System softkeys are reset.

Adjusting the Beeper

After turning the terminal on, if you want to adjust the volume, tone, or duration of the beeper, first press **Help** on the keypad. To make adjustments, you then press the function keys corresponding to the softkey labels that appear at the bottom of the screen. (The **[Touch On]** softkey enables and disables the touchscreen option and the HP Mouse, and does not affect the beeper.)

Resetting the Terminal

If the terminal locks up when in use, it displays the message "KbLock". If you have no external keyboard, the only way to unlock the terminal without sending an escape sequence from the host is to turn the terminal off, then on again. When the terminal comes back on

- Display memory is cleared.
- Margins and tab stops are reset to their default values.
- The keypad is unlocked (as well as the devices connected to the HP-HIL port or the barcode port).
- Any error conditions and error messages are cleared.
- **[Remote Mode]** is turned on; all other System softkeys are turned off.
- In DEC mode, the numeric keypad and cursor keys are reset to their default functions, and Wraparound is turned off.
- All data transfers through both datacomm ports are canceled, the datacomm buffers are cleared, and if the terminal has been configured for XON/XOFF receive pacing, an XON is sent.
- Turns off the **Insert Char** and **Caps** keys.

Keyboard Resets

If you do have an external keyboard, you can use it to perform a soft or hard reset instead of turning the terminal off and on again.

Soft reset A soft reset clears error conditions and unlocks the keyboard without clearing display memory or changing settings back to their defaults. To perform a soft reset, hold down **Shift** and press **Reset Break**.




Hard reset A hard reset has the same effects as switching the terminal off and on. To perform a hard reset, hold down **CTRL** and **Shift** and press **Reset Break**.

For more details on the effects of soft and hard resets, see section 4.2 of the *Installation, Configuration, and Maintenance Manual*.

2.3 Display Screen Settings

The 3082A terminal has a built-in display screen that provides 24 rows by 80 columns for data entry and editing. Most of the operating characteristics of the screen can be defined on the configuration menus or the **margins/tabs/columns** menu.




Line Width

Display memory can store data in lines either 80 columns wide or 132 columns wide. The page width is chosen when the terminal is configured, and both widths are available no matter what terminal is being emulated. When the page width is set to 132 columns and an HP 2392A terminal is being emulated, the blue  key on the keypad (or the **Shift** key on the keyboard) can be used together with the  and  keys to scroll left or right to allow viewing of the other portion of display memory.

Number of Lines

In all emulations, display memory can store approximately 96 lines of data 80 columns wide, or 58 lines of data 132 columns wide.

- In the VT100 and VT52 emulations, the Multi-page feature can be disabled on the **Terminal Configuration Menu**, to provide a limit of 24 lines of either width.

When there are more than 24 lines of data in display memory, and the terminal is emulating an HP 2392A, the blue  key on the keypad (or the **Shift** key on the keyboard) can be used together with the  and  keys to scroll this data up or down into the display window on the screen.

Using special video attributes and oversized characters reduces the number of lines of data memory can hold.

Margins

The default left and right margins are columns 1 and 80 if the page width is set to 80, and columns 1 and 132 if it is set to 132. To change the margins in HP mode, go from the **System Menu** to the **margins/tabs/col** menu, then select the softkeys required.

In VT100 and VT52 modes, you cannot change the left and right margins.

Note

Data entry and editing occurs within the left and right margins, *unless* you use the cursor control keys to move outside the margins.

Tabs

In the default configuration for the HP 2392A emulation, there are no tab stops, except for the left margin. In the default configuration for the VT100 and VT52 emulations, there are tab stops every eight spaces. In all three emulations, you can go from the **System Menu** to the **margins/tabs/col** menu to set new tabs, clear individual tabs, or clear all tabs.

The **Prev** and **Next** keys on the keypad function as backward and forward tabs.

Ruler

To display a ruler showing the current margin and tab settings at the bottom of the screen, go from the **System Menu** to the **margins/tabs/col** menu, then select **[Display Ruler]**. To turn the ruler off, select **[Display Ruler]** again.

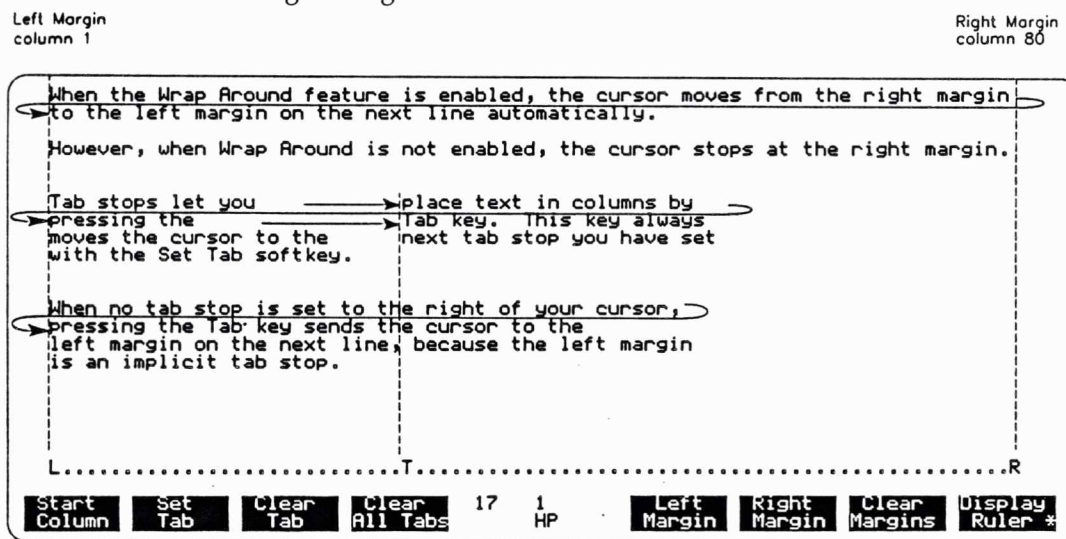
Wrap Around

In the terminal's default configuration, the Wrap Around feature is enabled. When you are typing characters and the cursor reaches the right margin, it wraps to the left margin on the next line and continues to display characters.

To disable Wrap Around, select "Yes" in the "Inh EOL Wrap" field on the **Global Configuration** menu. With Wrap Around disabled, the cursor stops at the right margin.

Margin Bell

In the terminal's default configuration, the margin "bell" is disabled. If you select "Enabled" in the "Margin Bell" field on the **Global Configuration** menu, the terminal beeps to let you know when you have only eight spaces left before the right margin.



Tab Stops: left margin and column 30

Exhibit 2.3. Display Screen Showing Margins, Tabs, Ruler, and Wrap Around

2.3 Display Screen Settings

2.3.1 System Softkeys

To control many of the terminal's built-in functions, you use function keys **f1** to **f8** on the keypad. As you operate these keys, the eight boxes directly above them on the screen, known as softkeys, change labels to tell you what function each key currently performs. The function keys on an external keyboard will work just like those on the keypad. If your terminal has the touchscreen option, you can select the same functions by simply touching the labels on the screen itself.

Softkeys at Power-on

When you turn the terminal on, the following menu appears

| | | | | | | | | | |
|----------------|---------------|---------------|------------------|---|---------|------------------|----------------|-------------------|------------|
| Line Modify | Modify All | Block Mode | Remote Mode * | 1 | 1 HP | enhance video | Memory Lock | Display Funcns | Auto LF |
|----------------|---------------|---------------|------------------|---|---------|------------------|----------------|-------------------|------------|

modes menu

This set of eight softkeys is known as the **modes** menu. You use the four softkeys on the left half of this menu to select the mode of communication with the host computer (see chapter 3). The four other softkeys have varied functions.

System Menu

f (keypad)
User System (keyboard)

Pressing the **f** key on the keypad (or **User System** on the keyboard) brings up the following set of softkeys (if permitted by the configuration)

| | | | | | | | | | |
|-------------------|---------------------|-----------------|-------|---|---------|--|---------|--------------|----------------|
| device control | margins tabs/col | service keys | modes | 1 | 1 HP | | editors | user keys | config keys |
|-------------------|---------------------|-----------------|-------|---|---------|--|---------|--------------|----------------|

These softkeys are called the **System Menu**, because they let you access all the other softkey menus in the system. The first softkey map in appendix C shows the relations between the **System Menu** and the menus it accesses.

Note

The term "System softkeys" applies not only to the softkeys on the **System Menu**, but also to all softkeys on other menus, except for the User softkeys discussed in section 2.3.2.

Other Menus

Each softkey on the **System Menu** shows the name of the softkey menu it takes you to.

device control

The softkeys on the **device control** menu control printers and exchange data with other external devices connected to the terminal's Auxiliary Port (Port 2). These operations are described in detail in chapter 4.

margins tabs/col

The softkeys on the **margins/tabs/col** menu set and clear margins and tabs and display a ruler that shows the margin and tab settings.

service keys

The softkeys on the **service keys** menu run self-tests built into the terminal's firmware. For more details, see chapter 4 of the *Installation, Configuration, and Maintenance Manual*.

modes

The **modes** menu is always displayed when you first turn the terminal on (unless you configure the terminal to prevent this). If you then work with other softkey menus, and need to return to the **modes** menu, the **[modes]** softkey on the **System Menu** takes you there.

editors

The softkeys on the **editors** menu access the screen-design editors built into the HP 3082. These editors are discussed in detail in chapters 5 to 8. Complete maps of the softkeys accessed from the **editors** menu appear in appendix C.

user keys

Selecting **[user keys]** on the **System Menu** takes you to the first of two sets of eight user softkeys that you can program as desired. For details on programming these keys, see section 5.7 of the *Installation, Configuration, and Maintenance Manual*.

config keys

The softkeys on the **config keys** menu let you display the screens that are used to configure the terminal. These screens are discussed in detail in chapter 5 of the *Installation, Configuration, and Maintenance Manual*.

Screen Label Conventions

System softkey labels follow three labeling conventions:

- If the words in a label start with lowercase letters (**[device control]**, for example), the softkey takes you to the softkey menu of that name.
- If the words in a label start with capital letters, the softkey performs the function described. In some cases (**[Save Enhance]**, for example), it takes you to another softkey menu at the same time.
- Softkeys that turn a mode or function on or off (**[Block Mode]**, for example), display an asterisk (*) when they are in the On state.

2.3 Display Screen Settings

2.3.2 User Softkeys

The HP 3082 provides 16 softkeys that you can program to perform custom functions. As with System softkeys, you trigger these softkeys either by pressing the function keys (**f1** to **f8**) at the corresponding positions on the terminal keypad or external keyboard, or, if your terminal has the touchscreen option, by simply touching the labels on the screen itself.

Programming User Softkeys

The HP 3082 lets you define up to 16 softkeys to perform whatever tasks you want. Typically, you define User softkeys within an application program, to simplify the user interface. The host computer uses escape sequences to send the softkey definitions to the terminal. (For details on these escape sequences, see section 3.6 of the *Host Programmer's Reference Manual*.)

You can also define User softkeys from the keypad or keyboard (see section 5.7 of the *Installation, Configuration, and Maintenance Manual*).

The characteristics you define for each User softkey are

- a screen label to identify the function it performs
- a string of characters (known as the report string) that the softkey generates when triggered; this string can include control codes and escape sequences
- a destination code to specify whether the report string is processed locally, sent to the host, or sent out the auxiliary port (Port 2) when the softkey is triggered.

Default Definitions

The 16 User softkeys are defined and displayed in two banks of eight, numbered f1 to f8 and f9 to f16. Until you program them for your own purposes, these softkeys have default definitions programmed at the factory.

User softkeys f1 to f8 have the default labels **[f1]** to **[f8]**. Their default report strings are the escape sequences **Esc p** to **Esc w**, and their default destination is T for "Transmit". This means that when these softkeys are triggered, their strings are sent to the host.




User softkeys f9 to f15 have as their default labels seven punctuation marks not otherwise available on the keypad; f16 is labeled with a back arrow and serves as a backspace key. The seven punctuation marks and the **Esc** control code are the default report strings for these softkeys. The default destination for these strings is N for "Normal". This means that they will be treated just like any string entered at the keypad: if the terminal is currently set for

entering data locally, the string will be processed locally; if the terminal is set for communicating with the host, the string will be sent to the host.


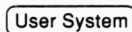


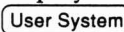

Displaying User Softkeys

The way you display User softkeys depends on whether you are using the built-in keypad or the optional external keyboard.


Keypad Procedures

To display User softkeys f9 to f16, press the  key. To then display User softkeys f1 to f8, press the  key. (Press the  key again to return to the **System Menu**).


Keyboard Procedures

To display User softkeys f1 to f8, hold down  and press . To display User softkeys f9 to f16, hold down  and press . (Press  without  to return to the **System Menu**).


2.4 Using the Keypad

The terminal keypad contains several keys used to control the cursor, move through display memory, and clear data from the screen. Some of these keys work differently depending on whether the HP 3082 has been configured to emulate an HP terminal or a DEC terminal. The blue  key on the keypad shifts the functions of most of the other keypad keys.



Arrow Keys

The arrow keys are used to move the cursor around the screen. In HP mode they are also used with the  key to scroll data onto the screen from elsewhere in display memory. These are the only keys that let you go outside the margins. (In VT100 mode, these keys can be reconfigured for specific applications.)





In HP mode, pressing the  key moves the cursor to the left margin on the top row of the screen and scrolls the text in display memory down until the cursor sits on the first line in display memory. In DEC mode, this key moves the cursor as just described, but does not scroll the text in display memory.






In HP mode, pressing  and then  moves the cursor to the left margin on the bottom row of the screen and rolls the text in display memory up until the cursor sits on the last line in display memory. In DEC mode, this key combination has no effect.





Pressing  or  moves the cursor up or down. In HP mode, the cursor wraps vertically at the top and bottom rows; in DEC mode, it simply stops.








In HP mode, pressing  and then  or  scrolls the text in display memory up or down one row while the cursor stays still. In DEC mode, this key combination has no effect.





Pressing  or  moves the cursor left or right. In HP mode, the cursor wraps at column 1 and at column 80 or 132; in DEC mode, it simply stops.



When the terminal is in HP mode and the screen width is configured to 132 columns, pressing  and then  or  displays columns 1 to 85 or columns 47 to 132, respectively. In DEC mode, this key combination has no effect; you must move the cursor back to the desired position with the  or  key alone.

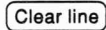


If the terminal is not in Forms Mode, pressing  generates the H_T character and moves the cursor forward one tab stop, while pressing  generates the sequence E_i and moves the cursor back one tab stop. If the termi-

the **Terminal Configuration** menu so that the cursor just moves and does not overwrite characters. In DEC mode, the cursor always overwrites with blank characters when this key is pressed.



Pressing generates a \mathcal{Q}_R and moves the cursor to the left margin of the current line. If you have enabled "Auto LF" in HP mode or "New Line Mode" in DEC mode, the \mathcal{Q}_R is followed by a \mathcal{I}_F , and the cursor also advances to the next line.



Pressing erases all characters from the cursor to the end of the current line, while pressing erases all characters from the cursor to the end of display memory.



This key displays the **Beeper Control Menu**, which is used to adjust the volume, tone, and duration of the terminal beeper, as well as to turn the touchscreen off and on.



This key returns the display to the **System Menu** from whichever softkey menu is currently on screen (two presses are required to move from the User 2 softkeys).



This key sends the host blocks of data that are already displayed on the screen.

Blue Key

The blue key lets you "shift" the keypad momentarily to

1. **generate lowercase letters from the alphabetic keys and the blue symbols on the number keys.** Press , then the key for the letter or symbol you want. Each time you want another lowercase letter or symbol, you must press again first.
2. **display User softkeys f9 to f16.** To switch from the current softkey menu to User softkeys f9 to f16, press . To switch back to the preceding menu, press again.
3. **scroll text displayed on the screen.** Press , then the appropriate arrow key (see above).
4. **send a 200-ms break to the host.** While holding down the key, press .

2.5 Using the Optional External Keyboard

The optional external keyboard has several keys that work the same no matter which type of terminal is being emulated. Many of these keys perform functions not available on the built-in keypad. For information on keys not mentioned here, see section 2.5.1 if you have the HP 3082 configured to emulate an HP 2392A, or section 2.5.2 if you have it configured as a DEC VT100 or VT52.

Clear line

Clear display

Pressing **Clear Line** erases all characters from the cursor to the end of the current line, while pressing **Clear display** erases all characters from the cursor to the end of display memory.

Return

Pressing **Return** generates a \mathbb{R} and moves the cursor to the left margin of the current line. If you have enabled "Auto LF" in HP mode or "New Line Mode" in DEC mode, the \mathbb{R} is followed by a \mathbb{F} , and the cursor also advances to the next line.

CTRL

To generate the standard ASCII control codes (decimal values 0 through 31) hold down the **CTRL** key and press the corresponding alphanumeric key. (To match alphanumeric keys to the control codes they produce, see Exhibit A.3.1 in appendix A.)

The combination **CTRL** + **Shift** + **Reset Break** causes a hard reset.

Shift

The **Shift** key is pressed together with alphanumeric keys to generate capital letters and symbols (its action is also affected by the **Caps** key described below).

Tab

Shift + **Tab**

If the terminal is not in Forms Mode, pressing the **Tab** key at the left of the keyboard generates the \mathbb{H} character and moves the cursor forward one tab stop, while pressing **Shift** + **Tab** generates the sequence \mathbb{F} \mathbb{i} and moves the cursor back one tab stop. If the terminal is in Forms Mode, the next tab stop is considered to be the beginning of the next field and the previous tab stop is the beginning of the previous field.

Caps

When you press the **Caps** key, the word "Caps" appears at the bottom of the screen, and the effect of the **Shift** key on the alphabetic keys is reversed: these keys then generate **capital letters** when pressed alone, and **lowercase letters** when pressed with **Shift**. The **Caps** key only affects alphabetic keys. If you are using a USASCII keyboard and have the Caps Lock field enabled on the **Global Configuration** menu, the **Caps** key has no effect.

To turn off the **Caps** key, press it again.

DEL ESC

Pressing the **DEL ESC** key on its own generates the \mathbb{E} character. (This character is not, however, displayed on the screen, unless you engage the

[Display Functions] softkey on the **modes** menu before typing it.)

Holding down **[Shift]** and pressing **[DEL ESC]** generates and displays the DEL character.

[Reset Break] **[Stop]**

The **[Reset Break]** and **[Stop]** keys are used to reset the terminal, to interrupt communications with the host, and to signal the host. For full details on soft and hard resets, see section 4.2 of the *Installation, Configuration, and Maintenance Manual*. For more on how these two keys affect communication with the host, see section 3.6 of this manual.

[Next] **[Prev]**

Pressing **[Next]** or **[Prev]** scrolls the text in display memory up or down on the screen one page (24 lines) at a time. (Note that these keys do *not* perform the same function as the **[Next]** and **[Prev]** keys on the keypad.) For these keys to work in the VT100 or VT52 emulation, the "Multi-page" feature must be enabled on the ANSI Terminal Configuration Menu.

[User System]
[Shift] + [User System]

Pressing the **[User System]** key displays the **System Menu**. Holding down **[Shift]** and pressing **[User System]** displays User softkeys f1 to f8.

[Menu]
[Shift] + [Menu]

Pressing the **[Menu]** key alternately turns off the softkey display (leaving lines 27 and 28 blank) and displays User softkeys f1 to f8. Holding down **[Shift]** and pressing **[Menu]** alternately displays User softkeys f9 to f16 and User softkeys f1 to f8.

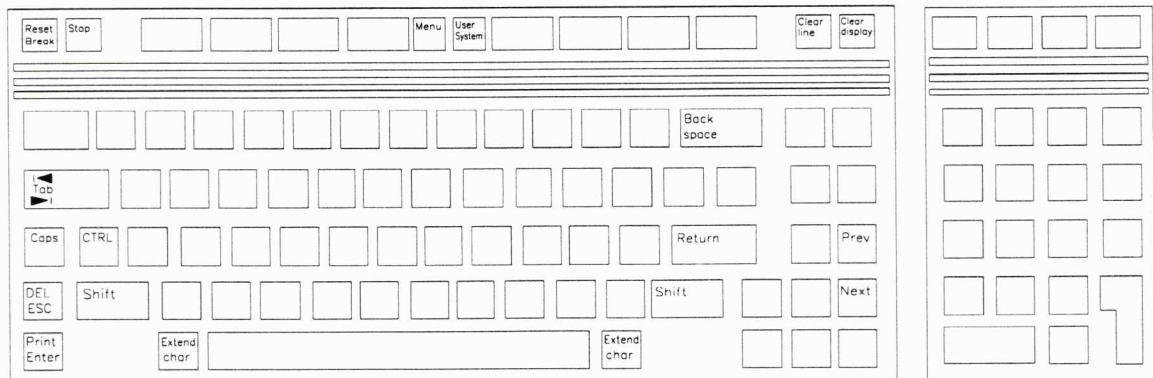


Exhibit 2.5 Keys Discussed in Section 2.5

2.5 Using the Optional External Keyboard

2.5.1 Keyboard Features Unique to HP Mode

Some of the features of the external keyboard work only in HP mode, while others work differently in HP mode from the way they do in DEC mode.

Numeric Pad Keys

In HP mode, the **Tab** key on the numeric keypad works just like the **Tab** key at the left side of the main keyboard (see section 2.5). The **Enter** key is used just like the **Send** key on the keypad, to send blocks of data to the host (see chapter 3).

Edit Control Keys

Four of the six keys in the Edit Control Group work only in HP mode.

Insert char

The **Insert Char** key lets you insert characters into text already displayed on the screen, instead of overwriting it. To insert characters, press this key once (the abbreviation "Ins" appears in the status block). Any characters you type are inserted at the cursor position, those to the right are pushed right, and any characters pushed past the right margin are lost.

When you are done inserting characters, press this key again ("Ins" disappears from the status block).

Characters sent by the host when the **Insert Char** key is engaged will be inserted at the cursor position without overwriting existing text.

Delete char

Pressing **Delete Char** causes the character at the cursor to be deleted. Any characters between the cursor and the right margin then move one column to the left.

Insert line

Pressing **Insert line** inserts a blank line at the row the cursor is on and pushes the remaining text down one row. The cursor moves to the left margin on the blank line.

Caution

When display memory is full, inserting a line can cause data to be lost. (For a way of avoiding such loss, see "Using Overflow Protection" in section 2.6.)

Delete line

Pressing **Delete Line** deletes the line that the cursor is on. Any text below the deleted line moves up one row, and the cursor moves to the left margin.

Other Keys

Several other keys on the keyboard either work only in HP mode, or work differently in HP mode from the way they do in DEC mode. The descriptions below apply to HP mode only.

Print Enter
Shift + Print Enter

When pressed without the **Shift** key, the **Print Enter** key works just like the **Send** key on the keypad, sending blocks of data to the host. Pressed together with the **Shift** key, it sends data to a printer. (For more on transmitting data blocks, see sections 3.4 and 3.5; for more on printing out data, see section 4.1.)

Back space

This key generates the **B₅** character, which causes the cursor to move left one character space.

(space bar)

Pressing the space bar moves the cursor to the right and overwrites characters with blanks. If you set the "Space Overwrite" field in the **Terminal Configuration** menu to "Yes", the cursor can overwrite with blank spaces or just move across existing characters. See *Installation, Configuration, and Maintenance Manual* for details.

Extend char

When the terminal is configured to use eight data bits in communicating with the host, holding down the **Extend char** key lets you access the Roman Extension character set at the keyboard. (For further details, see appendix A.)

Select

The **Select** key works only in HP mode; before you can use it, you must enable it by entering the sequence **F₆ &k1**. Once you enable this key, pressing it sends the sequence **F₆ &P** to the host, where it may be used for any purpose desired. (For more details, see "Select Key" in section 3.6 and "Cursor Position: Send" in section 3.2 of the *Host Programmer's Reference Manual*.)

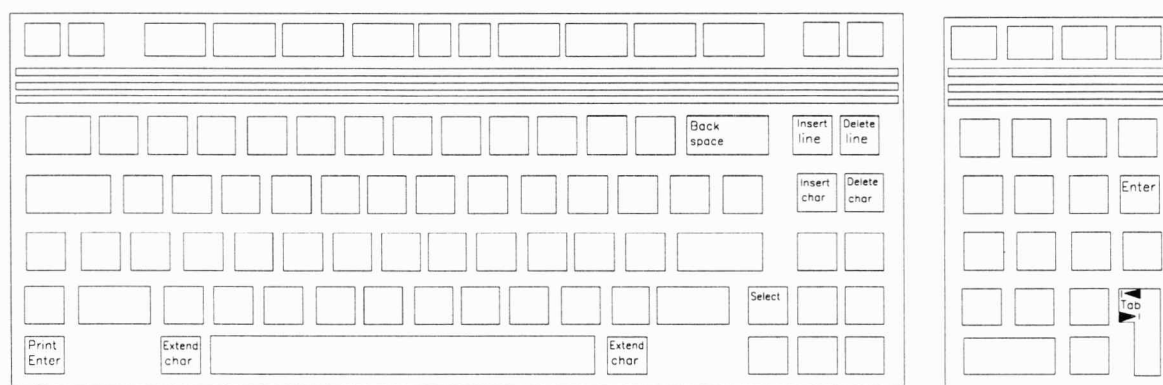


Exhibit 2.5.1 Keyboard Features Unique to HP mode

2.5 Using the Optional External Keyboard

2.5.2 Keyboard Features Unique to DEC mode

When the terminal is configured to emulate a DEC VT100 or VT52 terminal, the optional keyboard is remapped to emulate a DEC keyboard. Some keys are disabled, while others work differently from the way they do in HP mode.

Numeric Pad Keys

In DEC mode, the keys in the Numeric Pad group are remapped as follows:

- The keys in the top row (*****, **/**, **+** and **-**) become Program Function keys **PF1** to **PF4**, and their function is determined by the application.
- The blank key above the ***** key becomes a **Line Feed** key.
- The **Enter** key becomes a **-** key.
- The **Tab** key becomes the DEC **Enter** key, generating either a **CR** or a **CR LF**, depending on whether the **[New Line Mode]** softkey on the **modes** menu is turned on.

In both VT100 and VT52 emulations, you can remap the numeric keys to operate as program function keys by selecting the "Application" option in the "Numeric Kpad Mode" field on the **Terminal Configuration** menu. In this case all the keys generate special escape sequences to be interpreted by the application (for a list of these escape sequences, see "Numeric Pad Mode" in section 2.3.2 of the *Host Programmer's Reference Manual*.)

A keyboard overlay (HP part number 5180-6303) is available to show the functions of this group of keys in DEC mode.

Cursor Control Keys

There are two differences between the way the arrow keys operate in DEC mode and the way they do in HP mode:

- You *cannot* use these keys together with the **Shift** key to scroll text.
- In the VT100 emulation only, you can remap these keys to operate as program function keys, by selecting the "Application" option in the "Cursor Key Mode" field on the **Terminal Configuration** menu. In this case, these keys generate special escape sequences to be interpreted by the application. (For a list of these escape sequences, see "Cursor Keys Mode" in section 2.3.2 of the *Host Programmer's Reference Manual*.)

Edit Control Keys

In DEC mode, the **Clear line** and **Clear display** keys work as described in section 2.5, but the following keys are disabled:

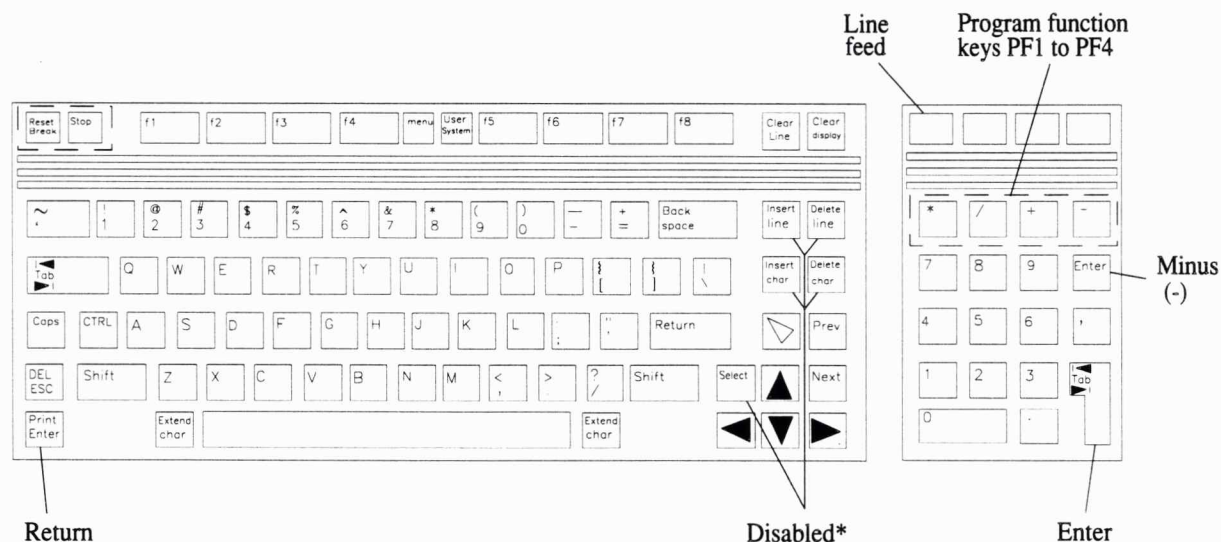
- **Insert line** and **Delete line**
- **Insert char** and **Delete char**

Other Keys

Several other keys work differently in DEC mode from the way they do in HP mode.

- The **Select** and **Extend Char** keys have no function.
- The **Print Enter** key becomes a **Return** key, generating either a CR or a CR LF , depending on whether the **[New Line Mode]** softkey on the **modes** menu is engaged.
- The **Prev** and **Next** keys work only if the "Multi-page" field is enabled on the **ANSI Terminal Configuration** menu.
- The **Back space** key can be configured to operate in two different ways. If the "Backspace Key" field on the **Terminal Configuration** menu is at its default setting ("Del/Backspace") this key generates the DEL control code when pressed alone. When pressed with **Shift**, it generates the BS control code. If the same field is set to "Backspace/Del", the shifted and unshifted actions are reversed.
- Pressing the space bar always moves the cursor to the right and overwrites any existing text with blanks.

Exhibit 2.5.2. How the Keyboard Is Mapped for DEC Emulations



* Shift  and shift  are disabled in DEC mode.

* **Prev** and **Next** work only if Multi-page Display Memory is selected on the ANSI Terminal Configuration Menu.

2.6 Using Overflow Protection and Display Lock

The **[Memory Lock]** softkey on the **modes** menu accesses two features that are available in HP mode only. The first, Overflow Protection, gives you a way to avoid losing data when display memory is full. The second, Display Lock, lets you keep certain lines of text (such as headings or instructions) displayed at the top of the screen while you work elsewhere in display memory. Display Lock also lets you move blocks of text from one location to another in display memory.

Using Overflow Protection

Normally, if display memory is full and you or the host inserts data at some point on the screen, you lose a corresponding amount of data from elsewhere in display memory. (If the first line in display memory is currently on the screen, you lose data from the bottom of display memory. Otherwise, you lose data from the top.)

But if you enable Overflow Protection before you have filled display memory, you prevent data loss. If you or the host tries to make an entry that would consume memory, the system displays the message "MEMORY FULL Press RETURN to clear" and does not accept the entry.

To enable Overflow Protection

1. Move the cursor to the first line in display memory.
2. Press the **(System User)** (or **(f)**) key.
3. Select the **[modes]** softkey.
The **modes** menu is displayed.
4. select **[Memory Lock]**.

The asterisk that appears on the softkey label indicates Overflow Protection is enabled.

To disable Overflow Protection, select **[Memory Lock]** again. The asterisk disappears from the softkey label.

Using Display Lock

To keep certain lines of text (such as headings or command lines) displayed at the top of the screen while you work on other data or scroll or page through display memory, you can use Display Lock. Display Lock also gives you a quick way of moving blocks of text from one location to another in display memory.

Locking Lines on the Screen

To lock lines at the top of the screen

1. Move the text until the first line you want to lock appears on the top row of the screen.
2. Position the cursor on the row *below* the last line of data you want to lock. (If there is no data on the row to be locked, Display Lock will not work.)
3. Display the **System Menu** and select the **[modes]** softkey.
The **modes** menu is displayed.
4. From the **modes** menu, select **[Memory Lock]**.

An asterisk appears on the softkey label, and Display Lock is enabled.

All lines above the one the cursor is on are now locked. If you add lines of data at the bottom of the screen, the preceding text rolls up under the locked lines, as if the last locked line were the top edge of the screen. If you scroll or page back and forth through display memory, the unlocked text scrolls up and down under the locked text. In either case, the relative position of the unlocked text in display memory is altered.

To unlock locked lines, simply access the **modes** menu and select **[Memory Lock]** again. The asterisk disappears from the softkey label, and the lines are unlocked.

Moving Blocks of Text

To move a block of text

1. Lock the block of text as described above.
2. Scroll through display memory until the correct line of unlocked text immediately follows the locked text block.
3. Unlock the text as described above.

Note

-
- Overflow Protection is *not* enabled when you are using Display Lock.
 - If you insert a line in a display-locked area, the last line in this area scrolls out of it.
 - If you delete a line from a display-locked area, the next line below this area rolls up into it.
-

2.7 Video Enhancements

The **[enhance video]** softkey on the **modes** and **editors** menus brings up the **enhance video** menu. The **enhance video** menu lets you vary the appearance of characters displayed on the screen. From this menu, you can select four different video attributes, six different character sizes, and four different character sets.

The enhance video Menu

When you select the **[enhance video]** softkey the **enhance video** menu is displayed with the choice of character sizes and sets listed on the two lines above it (see Exhibit 2.7). The asterisks on the softkeys and the highlights on these lines show what selections are active at the cursor position. Any text you had on the screen remains displayed.

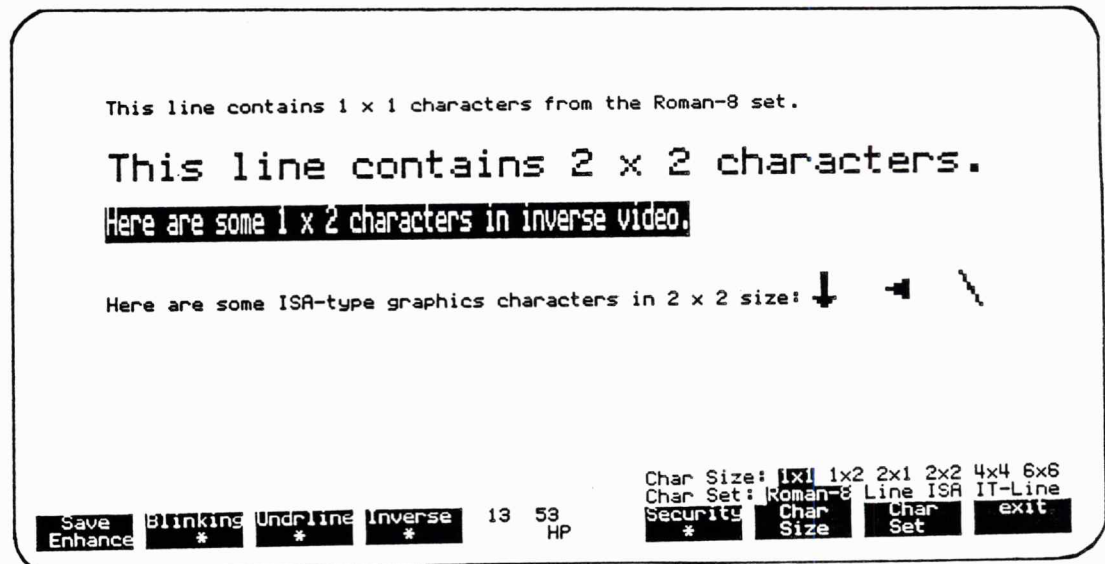


Exhibit 2.7. The **enhance video** menu

The four video attributes- blinking video, inverse video, underline video, and security video (in which data is stored but not displayed)- can be applied singly or in combination.

The **[Char Size]** softkey lets you select anything other than Roman 8, while the **[Char Set]** key lets you switch among the 4 character sets available on the terminal: Roman 8, ISA symbol drawing, IT line-drawing, and HP or DEC line-drawing set (depending on which type of terminal you are emulating).

Note

By selecting graphics characters sets from the **enhance video** menu, you remap your keypad or keyboard so that you can draw screens by typing in graphics characters. However, if your host computer can accept block transfers, you will find that the Forms Editor and the Graphics Editor give you a much faster and easier means of drawing lines and other graphics.

For more information on the Forms and Graphics editors, see chapters 6 and 8. For more information on all the character sets available on the HP 3082, see appendixes A and B.

How Enhancements Work

Character size is a **screen enhancement**. When you select a new character size, all characters input by you or by the host, anywhere on the screen, will be in that size until you select a different one.

The four video attributes and four character sets are **line enhancements**. When you select an attribute or character set, it applies from the cursor position to the end of the line or the point where you turn it off, whichever comes first.

Video Enhancements within the Editors

Part 2 of this manual discusses the built-in editors that you can use to design screens on the HP 3082. Each of these editors contains its own **enhance video** menu that you use to select video enhancements for the objects you are drawing.

If you select video enhancements from the **enhance video** menu on the **modes** menu, the selections do not apply if you go into one of the editors, but become active again once you exit to the main **editors** menu or go to any other menu of System softkeys outside the editors. Likewise, the selections you make on the **enhance video** menus within the individual editors have no effect once you exit these editors.

Sending Enhancements to the Host

When you send the host a block of text that contains video enhancements (video attributes, oversized characters, or characters from alternative sets), they are converted into escape sequences. For further information on these escape sequences, see chapters 3 and 4 of the *Host Programmer's Reference Manual*.

2.7 Video Enhancements

2.7.1 Using Video Enhancements

Using the **enhance video** menu, you can either select video enhancements before you enter text, or apply them afterward. You use the same menu to cancel or change enhancements.

For video attributes and character sets, as long as you are using 1 x 1 characters, you have a choice: you can either select these enhancements, then type the text, or type the text first, then go back and switch on the enhancements. If you are using oversized characters, make all selections before typing.

How To Select

To select video enhancements for text:

1. Position the cursor at the point on the screen where you want the enhancements to start.
2. Select **[enhance video]**. The **enhance video** menu appears.
3. Select the desired enhancements:
 - To select blinking, underline, inverse, or security video, select the corresponding softkey. An asterisk appears on the screen label.
 - To select a character set or size other than the one currently highlighted in the message window, select the **[Char Set]** or **[Char Size]** softkey as many times as necessary to move the highlight to the set or size you want.
4. Select **[Save Enhance]** to activate the enhancement and return to the menu where you were working originally.
5. Type in the characters that are to appear with the enhancements you have just selected.

To return to the menu where you were working before without changing any enhancements, select **[exit]**.

Canceling Enhancements

To cancel video enhancements, move the cursor to the point where you want the enhancements to stop or change. From the **enhance video** menu, or turn off all enhancements and select **[Save Enhance]**. The previous enhancements are turned off from that point on the line and subsequently typed text will have no enhancements.

Inserting and Deleting Characters

If you use the **Insert char** key on the external keyboard to insert characters within a video-enhanced area, those characters will have the same enhancements as the other characters in that area.

If you use the **Delete char** key on the external keyboard to delete a character within a video-enhanced area, the number of enhanced character positions on that line will be reduced by one.

Communicating with the Host Computer

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| 3.1 Overview | 3-2 |
| 3.2 Preparing the Terminal To Communicate | 3-4 |
| 3.3 Error Correction in Character Mode (HP emulation only) | 3-6 |
| 3.4 Communicating in Block Mode | 3-8 |
| 3.5 Communicating in Forms Mode | 3-10 |
| 3.5.1 How Forms Mode Works with Block and Character Modes | 3-12 |
| 3.6 Communication-Control Keys | 3-14 |
| 3.7 Displaying and Sending Control Characters | 3-16 |

3.1 Overview

The HP 3082 can communicate with host computers in Character Mode, Block Mode, and Forms Mode. Which mode you use depends on the host's operating system and the application you are running. In Character Mode, each character is sent to the host as you type it. In Block Mode, you type in a line or page of data on the screen, then send it to the host as a block. In Forms Mode, which is used together with Character Mode or Block Mode, you can enter data only in certain predefined fields on the screen.

Choices with HP and DEC Emulations

When configured to emulate an HP 2392A terminal, the HP 3082 can communicate in Character Mode, Block Mode, and Forms Mode.

When configured to emulate a DEC VT100 (ANSI) or VT52 (EM52) terminal, the HP 3082 can communicate in Character Mode only.

Relations Among Modes

Exhibit 3.1 shows the relations among the data-communication modes available for each emulation.

Character Mode

In **Character Mode**, the terminal sends the host each character as you type it. If your host does not echo your keystrokes back to the terminal, you must configure the terminal to provide a local echo so that the characters you type will be displayed and certain control keys will work.

Block Mode

In **Block Mode**, the terminal displays data on the screen as you enter it and stores it in display memory, but does not send it to the host until you press **Send** (on the keypad) or **Print Enter** (on the keyboard). Thus you can edit data extensively before you send it, making full use of the edit control keys if you are working with an external keyboard.

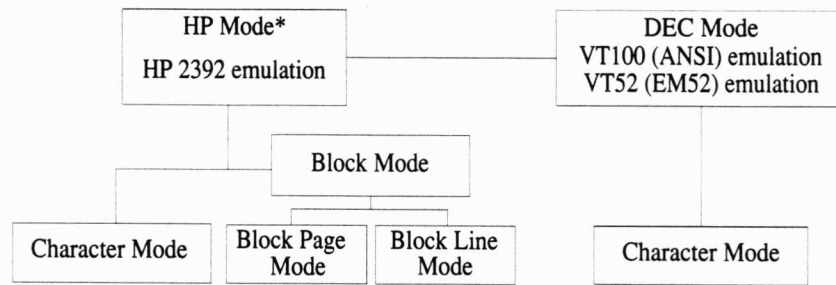
You can send either one line of data at a time, or the entire contents of display memory, depending on the setting chosen for the "Line/Page Mode" field of the **Terminal Configuration** menu.

Forms Mode

Forms Mode is designed for use with forms-oriented software. In **Forms Mode**, you can enter data only in fields that have been defined as unprotected, and can send only the contents of these fields to the host.

The data can be sent either as you type (Character Forms Mode), or one field at a time (Block Line Forms Mode), or one screen at a time (Block Page Forms Mode), as your application requires.

Sections 3.3 through 3.5 describe in detail how to use the modes shown in Exhibit 3.1.



* Note: In HP emulation, the terminal can be placed in a special Forms Mode in which data can be entered only in predefined fields.

Exhibit 3.1. Relations among Host-Communication Modes

3.2 Preparing the Terminal To Communicate

Before you can communicate with the host computer, you must connect the terminal and configure it to match the host's requirements. You must also make several selections on the **modes** menu of softkeys.

Connecting and Configuring the Terminal

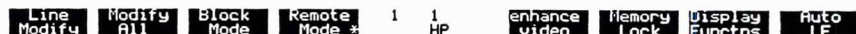
Before you can communicate with the host

- you must have the terminal connected to the host via Port 1
- you must have the terminal configured correctly for the host and the application you will be using. To configure the terminal for host communications, you use the **Global Configuration**, **Terminal Configuration**, and **Host Port (Port 1) Configuration** menus.

For more information on these procedures, see the *Installation, Configuration, and Maintenance Manual*.

Checking the modes Menu

Once the terminal is connected and configured, you should check the settings of three softkeys on the **modes** menu that affect communications with the host: the **[Remote Mode]** softkey, the **[Block Mode]** softkey, and the softkey that is labeled **[Auto LF]** in HP Mode and **[New Line Mode]** in DEC mode. An asterisk (*) on any of these softkeys means it is turned on.



The screenshot shows a row of softkeys on a terminal screen. From left to right, they are: 'Line Modify', 'Modify All', 'Block Mode', 'Remote Mode *', '1', '1 HP', 'enhance video', 'Memory Lock', 'Display Functns', and 'Auto LF'. The 'Remote Mode *' softkey has an asterisk, indicating it is turned on.

This menu is displayed automatically when you power the terminal on. To display it at other times, go to the **System Menu** and select the **[modes]** softkey.

[Remote Mode]

Before attempting to communicate with the host, make sure the **[Remote Mode]** softkey is turned on. Otherwise the terminal is in Local Mode (that is, off-line) and cannot communicate.

[Block Mode]

If your host program will be using Block Mode, it should turn this softkey on automatically. When the **[Block Mode]** softkey is off, the terminal is in Character Mode.

[Auto LF] and [New Line Mode]

The softkey at the f8 position on the **modes** menu is labeled **[Auto LF]** when the terminal has been configured for HP emulation, and **[New Line Mode]** for DEC VT100 (ANSI) or VT52 (EM52) emulation. Turning this softkey on makes the terminal append a **LF** automatically after every **CR**.

You may want to turn this softkey on

- if you will be working in Local Mode or Block Mode
- if you will be working in Character Mode but your host does not send a **LF** automatically after it echoes a **CR**.

3.3 Error Correction in Character Mode (HP emulation only)

When the HP 3082 is configured to emulate an HP 2392A terminal, you can temporarily stop transmitting to the host, so that you can modify the data before resending it.

Modifying and Resending Data

If your terminal is configured for HP 2392A emulation, turning on the **[Line Modify]** or **[Modify All]** softkey on the **modes** menu lets you edit lines of data without transmitting anything to the host. When done, you resend the edited data, then resume normal transmission.

[Line Modify]

The **[Line Modify]** softkey turns itself off as soon as you resend a line of data. Hence it is best to use this softkey when you have only one line to change.

[Modify All]

The **[Modify All]** softkey works just like **[Line Modify]**, except that it is not turned off each time you resend a line. Hence **[Modify All]** is more convenient when you want to edit and resend several lines in succession.

To use **[Line Modify]** or **[Modify All]**, proceed as follows:

1. Select the desired softkey on the **modes** menu.
An * appears on the label.
2. Move the cursor to the screen line you want to change.
3. Make the change.
4. Press **[Send]** on the keypad or **[Print Enter]** on the keyboard.

The changed line is then resent, beginning from the start-of-text pointer or the start column and ending with the end of the line, unless transmission is halted sooner by a block terminator (see section 3.4). Control characters and escape sequences in the line are sent.

At any point in the above process, you can turn off **[Line Modify]** or **[Modify All]** by selecting the softkey again.

Start-of-Text Pointer

When you type in a line of text, if there is no data following it in display memory, the terminal automatically inserts a start-of-text pointer at the first character you key in. For example, if you begin to type following an operating system prompt, the pointer is inserted after that prompt. Then, if you later use **[Line Modify]** or **[Modify All]** to resend the line, the terminal resends only the data you entered, and not the host prompt.

Start Column

If a line contains no start-of-text pointer, the terminal starts resending at the Start Column. The default Start Column is column 1, but you can specify a different Start Column either with the **[Start Col]** softkey on the **margins/tabs/col** menu or with the "Start Column" field in the **HP Terminal Configuration** menu (see chapter 5 of the *Installation, Configuration, and Maintenance Manual*).

| |
|-------------|
| Note |
|-------------|

Using the **[Start Col]** softkey establishes a temporary start column that is lost when the terminal is turned off or has a hard reset performed.

3.4 Communicating in Block Mode

Block Mode is available only when the terminal is configured to emulate an HP 2392A. In Block Mode, data is displayed on the screen and stored in display memory as you enter it, but is not sent to the host until you press **Send** (on the keypad) or **Print Enter** (on the keyboard). Hence you can make full use of the editing keys to change data anywhere on the screen without affecting the host. When done editing, you can send the host either one line of data at a time (Block Line Mode), or the entire contents of display memory at once (Block Page Mode), depending on how the terminal is configured.

Configuring Block Size

The setting of the "Line/Page" field on the **HP Terminal Configuration** menu determines how large a data block the terminal can send the host. If you set this field to "Line", the terminal can send a maximum of one line of data at a time. If you set this field to "Page", the terminal can send all of the data in display memory at once. (For how to change this setting, see chapter 5 of the *Installation, Configuration, and Maintenance Manual* .)

For convenience, Block Mode used with the Line setting is called Block Line Mode, and Block Mode used with the Page setting is called Block Page Mode.

Selecting Block Mode

To select Block Mode

1. go to the **System Menu**, and select the **[modes]** softkey to display the **modes** menu.
2. on the **modes** menu, make sure both the **[Remote Mode]** softkey and the **[Block Mode]** softkey are turned on (have an * on them). To turn either of these softkeys on, select it once.

[Auto LF]

Before using Block Mode, if you want the cursor to advance one line automatically whenever you enter a carriage return, you should also turn on the **[Auto LF]** softkey on the **modes** menu.

Entering and Editing Data

In Block Mode, you can enter and edit data anywhere on the screen, making full use of the cursor-control and editing keys on the keypad or the external keyboard without sending anything to the host. The only data the host sees is the finished block you transmit when you are done editing.

Transmitting Data

Once you finish editing a data block, send it to the host as follows:

1. If you are using DC2 handshaking, move the cursor to the first character you want to send.

For other types of handshaking, do nothing; the terminal will automatically move the cursor to the start of the line (in Block Line Mode) or the start of display memory (in Block Page Mode) before sending the data.

2. Press the **Send** key on the keypad (or the **Print Enter** key on the external keyboard).

The terminal transmits all characters from the cursor to the end of the line (in Block Line Mode) or the end of display memory (in Block Page Mode), unless it is stopped by a block terminator first (see below).

If the block contains any video enhancements, alternate characters, or unprotected fields, the corresponding control characters and escape sequences are included, as are any control characters or escape sequences that you have displayed and embedded in the block.

For more information on handshaking, see section 5.3 of the *Installation, Configuration, and Maintenance Manual*.

Using Block Terminators

Normally, when you send the host a block of data, the terminal transmits all characters to the end of the line or the end of display memory, depending on whether you are in Block Line Mode or Block Page Mode, but the terminal will stop sending when control character known as the block terminator is reached.

The default block terminator is the ASCII character **Rs**, which you can enter only if you have the optional external keyboard (press **CTRL**, **Shift**, and **6** simultaneously). However, you can assign any other ASCII character as the block terminator by entering this character in the "Block Terminator" field on the **HP Terminal Configuration** menu.

Block terminators will halt transmissions in Character Mode and Block Line Mode as well as Block Page Mode, but are most likely to be useful in this last case.

3.5 Communicating in Forms Mode

In Forms Mode, which is available only when the terminal is emulating an HP 2392A, the terminal operator can enter data only in those parts of the form that have been defined as unprotected fields. Forms Mode can be used in combination with Character Mode, Block Line Mode, or Block Page Mode, as described in section 3.5.1.

Screen Forms and Unprotected Fields

In Forms Mode “unprotected fields” are the only places on the screen where the operator can enter data.

The easiest way to design forms of this type for the HP 3082 is to use its built-in screen editors together with a forms software package such as Hewlett-Packard VPlus or F/1000. Section 6.1 shows how to use an editor to design a typical form. (Unprotected fields can also be defined with escape sequences; see the *Host Programmer's Reference's Manual* for details.)

Turning On Forms Mode

When a host application downloads a data-entry form to the screen, it should also place the terminal in Forms Mode automatically. Should you ever need to place the terminal in Forms Mode yourself (for example, to test a form you are designing), enter the escape sequence `EW`.

To take the terminal out of Forms Mode, enter `EX`.

Entering Data

Once a form is displayed and the terminal is in Forms Mode, the only place you (or the host) can enter data is in the areas of the screen that were defined as unprotected fields when the form was designed.

When the host first displays a data-entry form and places the terminal in Forms Mode, the cursor moves to the start of the first unprotected field on the form.

While you are working with the form, if you try to enter data outside the unprotected fields, the terminal moves the cursor to the start of the next unprotected field and displays the character there.

When you type a character in the last position of a field, the terminal beeps and moves the cursor to the start of the next field, where it displays any further characters typed.

When you have filled the last unprotected field on the screen, the terminal beeps. Then

- if you have selected "Yes" in the "Auto Xmit Form" field on the **HP Terminal Configuration** menu, the contents of all the unprotected fields are sent to the host automatically.
- otherwise, the cursor stops just after the field. At this point you normally press **Send** on the keypad (or **Print Enter** on the keyboard) to send the filled-in form to the host. If you try to type a character instead, the beeper sounds again and the cursor goes to the start of the first unprotected field on the screen and displays the character there, overwriting anything you had entered previously.

Next **Prev**
Keypad

Pressing **Next** and **Prev** on the keypad move the cursor to the first character position in an unprotected field, as will pressing **Tab** on the keyboard.

Tab
Keyboard

Next **Prev**
Keyboard

The **Next** and **Prev** keys on the keyboard are *not* the same as the keys with the same label on the keypad. Pressing **Next** or **Prev** on the *keyboard* displays the next or previous page in display memory and positions the cursor at the start of the first unprotected field on that page.

↵

Pressing **↵** moves the cursor to the start of the first unprotected field on the screen.

Clear Line

Clears from cursor position to end of current field.

Clear display

Clears from cursor position through last unprotected field in display memory.

Insert Char
Delete Char

Both **Insert char** and **Delete char** work only inside unprotected fields. When **Insert Char** is used, characters pushed past the end of a field are lost.

3.5 Communicating in Forms Mode

3.5.1 How Forms Mode Works with Block and Character Modes

Forms Mode is always used in combination with Block Page Mode, Block Line Mode, or Character Mode. Block Page Forms Mode is the most commonly used, since it allows the greatest flexibility in editing and transmits an entire form of data at one time. In general, these modes work the same as when Forms Mode is not enabled, except that only the data in the unprotected fields is transmitted to the host. But there are some other differences to bear in mind.

Selecting the Mode

The host application should automatically place the terminal in the required mode (Block Page, Block Line, or Character Mode) at the same time as it enables Forms Mode.

Block Page Forms Mode

In Block Page Forms Mode, just as in ordinary Block Page Mode, the terminal sends no data to the host until the operator presses **Send** (on the keypad) or **Print Enter** (on the keyboard). Hence the operator can edit data in all the unprotected fields in display memory before transmitting it to the host.

Before sending the data, if DC2 handshaking is being used, the operator must position the cursor at the first character to be sent. If DC2 handshaking is *not* being used, the terminal will home the cursor to the start of the first unprotected field in display memory automatically before sending the data.

When the operator presses **Send** or **Enter**, the terminal sends the host all data in unprotected fields from the cursor to the end of display memory. After each field except the last one, the terminal sends a field separator (default character: \backslash). After the last field, it sends a block terminator (default character: $\$$).

Block Line Forms Mode

In Block Line Forms Mode, as in ordinary Block Line Mode, the operator enters and edits data on one line of the screen, then presses **Send** or **Print Enter** to send it to the host. The differences are

- pressing these keys transmits only the contents of the field where the cursor is. The terminal can send fields up to one line long, but if a field is shorter, the terminal stops transmitting at the end of it.
- regardless of what handshaking is used, the operator must move the cursor to the start of the field before sending the data; otherwise, the

terminal sends only the characters from the current cursor position to the end of the field.

- if you send one field, then press **Send** or **Print Enter** again, the following field is sent.
- if you press **Send** or **Enter** when the cursor is *not* in an unprotected field, the cursor moves to the next unprotected field, and its contents are sent.

Character Forms Mode

In Character Forms Mode, as in regular Character Mode, the terminal sends each character to the host as soon as the operator types it. Thus the operator cannot correct an error before it is transmitted.









Just as in regular Character Mode, however, the **Send** key or the **Print Enter** key can be used with or without the **[Line Modify]** or **[Modify All]** softkey to resend previously entered data with or without modifications. The differences are

- you can resend only one unprotected field of data at a time.
- the operator must move the cursor to the start of the field before sending the data; otherwise, the terminal sends only the characters from the current cursor position to the end of the field.
- the **[Line Modify]** softkey does not disable after each use, so it becomes interchangeable with the **[Modify All]** softkey.
- if you press **Send** or **Enter** when the cursor is positioned before the first unprotected field or between unprotected fields on the screen, the terminal finds and sends the next unprotected field.

Note

When data blocks are transmitted in Block Line Forms Mode or Block Page Forms Mode, or when the **Send** or **Print Enter** key is used (with or without **[Line Modify]** or **[Modify All]**) to resend a field in in Character Forms Mode, if the data contains any video enhancements, the corresponding escape sequences are *not* sent. If it contains any characters from alternate sets, the corresponding Roman 8 characters are sent instead. Any control characters visible in the fields *are* sent.



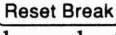
3.6 Communication-Control Keys

On the built-in keypad, the  key can be used with the  key to send a 200-ms break to the host. Several keys on the external keyboard also can be used to signal the host for various purposes. The  and  keys generate breaks and other signals that can interrupt and restore communications. The  key can be used with the  and  key for the same purpose. The  key sends an escape sequence that can be used as required by the host application.


Interrupting Communications

When your terminal is connected to the host, properly configured, and operating in Remote Mode, you have one way of interrupting communications from the built-in keypad, and several ways of doing so from the external keyboard. Except for the first case discussed below, all keys mentioned are on the external keyboard.


 +  (keypad)
 (keyboard)

On the built-in keypad, holding the  key down and then pressing the  key sends a 200-ms break to the host. On the external keyboard, pressing  does the same thing. The result is host- and application-dependent.







Pressing the  key alternately stops and resumes the transfer of data from the terminal's receive buffer to the screen. (When you stop the data transfer in this way, the word "STOP" appears in the Status Block at the bottom of the screen.)

Caution

Using the  key when you have not enabled XON/XOFF Receive Pacing on the **Host Port Configuration** menu could cause the receive buffer to overflow.

 + 
 + 

Holding down  and pressing  sends an XOFF to the host to stop the transmission of data. Holding down  and pressing  sends an XON to the host to resume transmission.

Resetting the Terminal

Two keystroke combinations on the external keyboard let you perform soft and hard resets of the terminal. Soft and hard resets are discussed in detail in in chapter 4.2 of the *Installation, Configuration, and Maintenance Manual*. This section describes only their effects on data communication.

Shift + **Reset Break**

Holding down **Shift** and pressing **Reset Break** causes a soft reset of the terminal. A soft reset has the following effects on data communications:

- if the terminal is sending any data to the host, it stops.
- the terminal's transmit and receive buffers are cleared.
- if the Receive Pacing field on the **Host Port Configuration** menu is set to XON/XOFF and an XOFF was received before the reset, the terminal sends an XON to the host. The host program can use this signal to resume sending.

CTRL + **Shift** +
Reset Break

Holding down **CTRL** and **Shift** and pressing **Reset Break** causes a hard reset of the terminal. A hard reset has the same effects on data communications as a soft reset, except that an XON is always sent and display memory is cleared.

Select

In HP mode only, the **Select** key can be enabled so that pressing it generates the sequence **E&P**, which is used for various purposes by some host applications. (For more details on this key, see "Select Key" in section 3.6 of the *Host Programmer's Reference Manual*.)

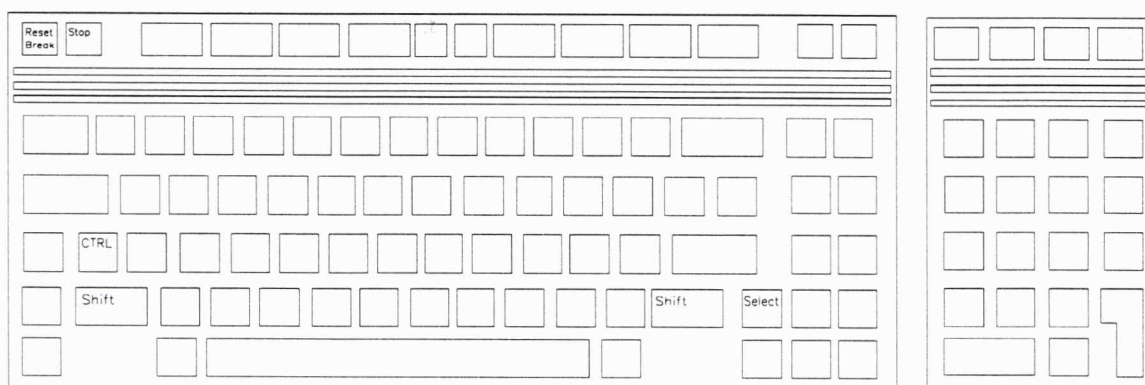


Exhibit 3.6. Keys Used to Control Host Communication

3.7 Displaying and Sending Control Characters

The **[Display Functns]** softkey on the **modes** menu causes the terminal to display control characters and escape sequences sent to it from the keypad, the external keyboard, or the host, instead of executing the corresponding functions. Two main uses of this feature are for debugging transmissions from the host and for embedding control characters and escape sequences in blocks of data to be sent to it.

Turning On

To turn on the Display Functions feature, simply select **[modes]** on the **System Menu**, then select **[Display Functns]** when the **modes** menu appears (an * appears on this softkey to show it is turned on).

To turn **[Display Functns]** off, simply select this softkey again. The * disappears to show the softkey has been turned off.

Performing a soft or hard reset or turning the terminal off will also turn **[Display Functns]** off.

Debugging Host Transmissions

Enabling **[Display Functns]** lets you view on the screen the control characters and escape sequences that the host is sending to the terminal. For example, with **[Display Functns]** enabled, if the host sends an H_T character, the terminal displays this character instead of moving to the next unprotected field or tab stop. This feature can be useful for debugging programs that are going to run on the terminal.

Sending Codes

in Block Mode You can also use the **[Display Functns]** feature to embed control characters and escape sequences when typing data to be sent to the host in blocks.

in Character Mode When you are communicating with the host in Character Mode, control codes and escape sequences are usually sent to the host as you key them in, but enabling **[Display Functns]** allows you to view the control characters and escape sequences you are keying in if your host echoes your entries to the display.

Note

The above instructions on using the **[Display Functns]** softkey cover most situations. But there are some complex interactions between this softkey and the current setting ("Yes" or "No") of the "Transmit Function" field on the **Terminal Configuration** menu. You may wish to experiment to determine how this setting affects the **[Display Functns]** softkey in your system.

Caution

Using **[Display Functns]** can disrupt DC1/DC2 Handshaking, because the terminal displays the handshaking signals sent by the host but does not act on them.

Printing Data and Passing Data Between the Host and External Devices

| | |
|--------------------------------------------------------------|-----|
| 4.1 Printing Selected Data | 4-2 |
| 4.2 Logging Data to Printers Automatically | 4-4 |
| 4.3 Passing Data between the Host and External Devices | 4-6 |

4.1 Printing Selected Data

When the Auxiliary Port (Port 2) of the 3082 is connected to a printer, you can use the **device control** menu (or the **Print Enter** key on the external keyboard) to make hard copies of data currently displayed on the screen or stored elsewhere in display memory.

Before Printing

Before you can print data, you must make sure that

- you have connected your printer to the Auxiliary Port (Port 2) with an RS-232-C cable.
- you have filled in the **Auxiliary Port (Port 2) Configuration** and **Printer Configuration** menus with the proper specifications for your printer (see chapter 5 of the *Installation, Configuration, and Maintenance Manual* and your printer manual for details).
- you have selected the proper Print Type on the **Printer Configuration** menu:
 - Roman 8 to print out data consisting solely of alphanumeric characters
 - Graphic to dump screens containing graphics characters (for example, forms or process graphics diagrams produced with the Forms and Graphics editors described in part 2).

Printing Alphanumeric Data

If you want to print out data consisting solely of alphanumeric characters, and have Roman 8 selected as your print type, you can use any of three softkeys on the **device control** menu to do so. (Two other softkeys on this menu let you advance the printer paper as necessary.) If you have an external keyboard, the **Print Enter** key provides a fourth printing option.

Printing from the device control menu

To print from the **device control** menu, select the **[device control]** softkey on the **System Menu**. The **device control** menu, shown below, appears.

| | | | | | | | | | |
|--------------|--|--------------|--------------|---|------|----------|-----------|-----------|------|
| device modes | | Advance Line | Advance Page | 1 | 1 HP | Copy All | Copy Page | Copy Line | exit |
|--------------|--|--------------|--------------|---|------|----------|-----------|-----------|------|

Copy Line

To print the line where the cursor is positioned, select **[Copy Line]**.



Copy Page

To print from the line where the cursor is positioned to the end of the screen, select **[Copy Page]** (see Exhibit 4.1).

**Copy
All**

To print from the line where the cursor is positioned to the end of display memory, select **[Copy All]** (see Exhibit 4.1).

 **(keypad)**
 **(keyboard)**

To halt the flow of data to the printer after starting one of the above operations, press  on the keypad or  on the keyboard.



**Advance
Line**

To advance the printer paper one line or one page, select **[Advance Line]** or **[Advance Page]**.

**Advance
Page**

Printing from the Keyboard

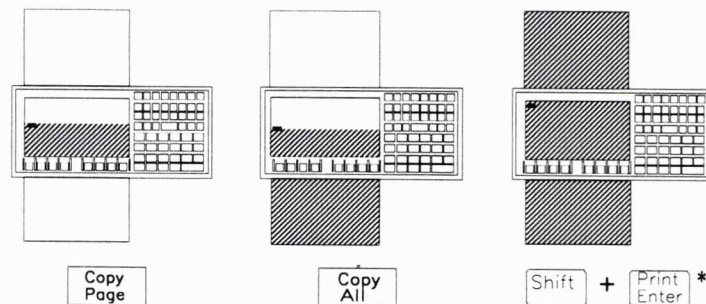
 + 

When you have the Roman 8 print type selected, you can send the entire contents of display memory to the printer by holding down  and pressing  on the external keyboard. Lines locked at the top of the screen with the Display Lock feature will not print. This key combination does not work in Forms Mode (see Exhibit 4.1).

Printing Graphics Screens

 +  (keyboard only)

To print out a pixel dump of the screen currently displayed (including the message window), select Graphics as the print type on the **Printer Configuration** menu, then press the above key combination.



* When graphics print type is selected, only the material currently displayed on the screen is printed.

Exhibit 4.1. Options for Printing Data

4.2 Logging Data to Printers Automatically

The **device modes** menu lets you set the terminal so that data sent to the display (whether from the terminal keypad, other input devices, or the host) will also be sent to the printer automatically. Choose **[Log Bottom]** to keep a record of all data sent to the screen. Choose **[Log Top]** to keep a record of any data that overflows display memory.

Bottom Logging

Bottom Logging lets you maintain a hard copy log of all lines added to the display, in the order in which they were entered locally or received from the host. With Bottom Logging enabled, each time the cursor moves from one line to another as the result of a **CR LF**, an explicit **LF**, or an end-of-line wrap-around, the line from which the cursor moved is sent to the printer (see Exhibit 4.2).

Top Logging

When display memory is full and you are not using Overflow Protection (see Section 2.6), if you or the host inserts more data, a corresponding amount of data is lost elsewhere in display memory. But with Top Logging enabled, this data is printed out before it is deleted.

Caution

- If the first line in display memory is displayed, you lose data from the bottom of display memory, and this data cannot be logged.
 - You cannot select Top Logging when you already have Overflow Protection selected.
 - You cannot use Bottom Logging and Top Logging at the same time. If you already have one selected, and then select the other, the first will be deactivated.
 - With either form of logging, the terminal stops accepting input while each line of data is being logged.
-

Before Logging

Before you can log data to a printer, you must make sure

- you have connected your printer to the Auxiliary Port (Port 2) with an RS-232-C cable
- you have filled in the **Printer Configuration** menu with the proper specifications for your printer (see your printer manual for details), and selected Roman 8 as the Print Type
- the baud rates and pacing you have selected on the **Host Port (Port 1) Configuration** and **Auxiliary Port (Port 2) Configuration** menus will

permit proper host-to-terminal and terminal-to-printer communications. The Host Port baud rate can differ from the Auxiliary Port baud rate, as long as correct pacing is used to prevent data loss.

For more information on the configuration menus mentioned above, see chapter 5 of the *Installation, Configuration, and Maintenance Manual*.

Enabling Logging

To begin Bottom or Top Logging

1. Go to the **System Menu** and select [**device control**]. The **device control** menu appears:

```
device modes  Advance Line  Advance Page  1  1 HP  Copy All  Copy Page  Copy Line  exit
```

2. On the **device control** menu, select [**device modes**]. The **device modes** menu appears:

```
device control  Log Top  Log Bottom  1  1 HP  Record Mode  Send Touch  exit
```

3. On the **device modes** menu, select [**Log Bottom**] if you want Bottom Logging, [**Log Top**] if you want Top Logging.

An * appears on the softkey you selected, indicating that Bottom or Top Logging is now active.

To stop logging, simply select the [**Log Bottom**] or [**Log Top**] softkey again. The * disappears, confirming that you have turned off the logging function.

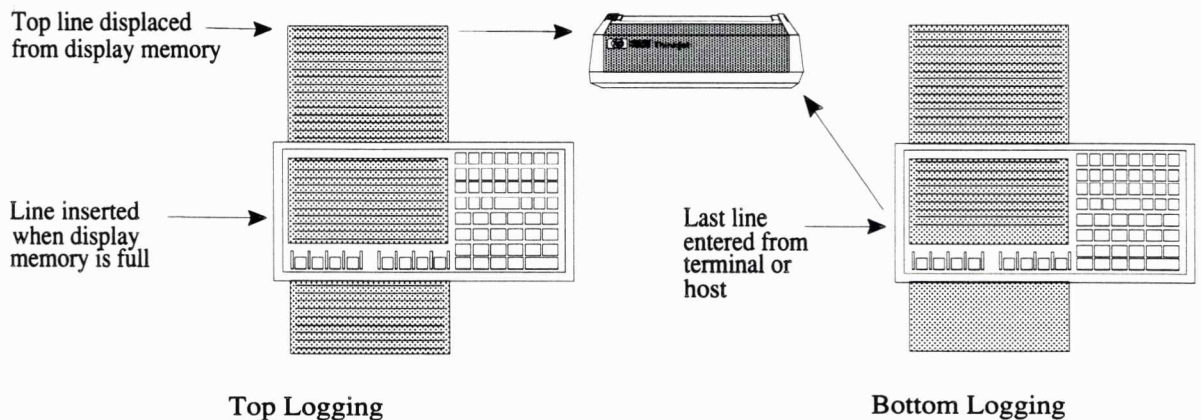


Exhibit 4.2. Bottom Logging and Top Logging

4.3 Passing Data Between the Host and External Devices

Enabling the **[Record Mode]** softkey on the **device modes** menu allows the terminal to pass data in both directions between a host computer connected to its Host Port (Port 1) and an external device connected to its Auxiliary Port (Port 2). This feature can reduce the number of ports and lines required in data-communication networks.

Sample Application

Exhibit 4.3 shows one example of how the data-passthrough capabilities of the HP 3082 terminal might be used. In this exhibit, the HP 3082 is connected through the Host Port (Port 1) to the host and through the Auxiliary Port (Port 2) to a data-collection device (in this case, an HP 48000 Remote Terminal Unit). With Record Mode enabled, the host can send a message through the 3082 to poll this device for information, and the device can respond, without any intervention by the terminal operator. At any time, the host can disable Record Mode, display status information or other messages on the terminal for the operator, then return to Record Mode and resume polling.

Note

When you are using Record Mode, the operator cannot enter data or send data to the host; the keypad and any other input devices connected to the terminal are locked. None of the data passing in either direction between the host and the device is displayed on the screen.

Before Enabling Passthrough Communications

Before selecting **Record Mode** to pass data between the host and an external device, ensure

- the host is properly connected at the Host Port (Port 1), and the external device is properly connected at the Auxiliary Port (Port 2) with an RS-232-C cable
- the settings on the **Host Port (Port 1) Configuration** and **Auxiliary Port (Port 2) Configuration** menus will permit proper communication between the host and the external device (note that baud rates need not match as long as correct pacing is used to prevent data loss)
- you have selected **[Remote Mode]** on the **modes** menu. (The **modes** menu is displayed when the terminal is first powered on, and also can be accessed from the **System Menu**.)

For more information on the configuration menus mentioned above, see chapter 5 of the *Installation, Configuration, and Maintenance Manual*.

Enabling Passthrough Communications

1. Go to the **System Menu** and select **[device control]**. The device control menu appears:

```

device control  Advance Line  Advance Page  1  1 HP  Copy All  Copy Page  Copy Line  exit
  
```

2. On the device control menu, select **[device modes]**. The device modes menu appears:

```

device control  Log Top  Log Bottom  1  1 HP  Record Mode  Send Touch  exit
  
```

3. On the device modes menu, select **[Record Mode]**.

An * appears on this softkey to show it is selected.

The host and the external device can now send data to each other through the HP 3082 terminal.

To exit **Record Mode**, simply select the **[Record Mode]** softkey again. The * disappears from the softkey label, confirming that you have left Record Mode.

HP 9000
HOST COMPUTER

HP 48000
REMOTE TERMINAL UNIT

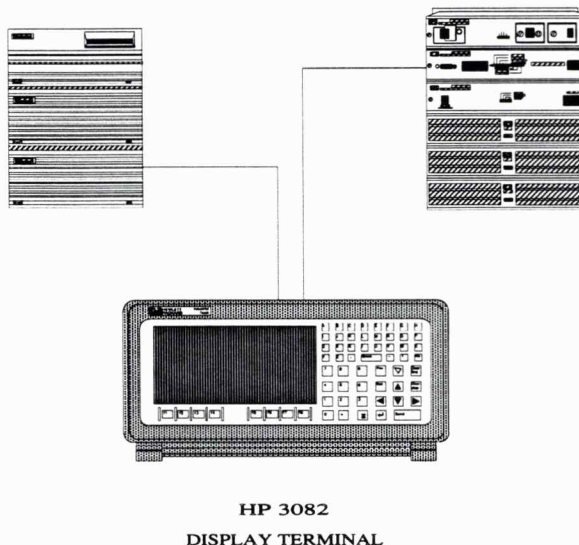


Exhibit 4.3. System Configured for Passthrough Communications

PART 2
Designing Screens with
the HP 3082

Introduction to the Screen Editors

5.1 Creating Data Entry Screens

The forms, fields, graphics, and touch editors provide a fast, easy way to design screens for use with forms packages and custom applications on host computers that accept block transfers.

Sample Application Screens

The screen below controls a manufacturing process. The operator prepares a batch of a product containing three compounds by entering numbers into unprotected (that is, data entry) fields. After the host computes the weights of the ingredients and writes them on the screen, it enables the feed mechanisms on the factory floor, and "paints" the hoppers on screen to show that the ingredients are ready to load. Next, the operator touches the target labeled "Load Batch", sending the host the signal to begin mixing.

Order number []
Batch number []
Total weight [] lbs
Proportion compound 1 [] %
Proportion compound 2 [] %
Proportion compound 3 [] %

LOAD BATCH MIX BATCH
DISCHARGE BATCH

forms editor fields editor graphics editor touch editor 24 80 HP enhance video exit

Exhibit 5.1.1 Graphics Created with the Graphics Editor (see chapter 8)

How the Screen Was Made

First, the designer used the Forms Editor to lay out the basic line grid you see in Exhibit 5.1.2. Then the Fields Editor was used to define the unprotected fields into which the operator and the host would enter data (Exhibit 5.1.3). The field labels, in 1 x 1 characters, could have been typed from any of the editors.

As Exhibit 5.1.4 shows, the next step was to use the Touch Editor to define the three touch targets needed for this application. To label the targets with oversized characters, the designer used the **enhance video** menu accessed from the main **editors** menu.

Finally, to draw most of the process-graphic diagram on the right side of the screen in Exhibit 5.1.1, the designer mainly used the Graphics Editor, "cutting and pasting" graphics characters to obtain the necessary shapes.

| | |
|-----------------------------------------|--|
| <hr style="width: 50%; margin: auto;"/> | |
| | |

forms editor
fields editor
graphics editor
touch editor
12 32 HP
enhance video

exit

Exhibit 5.1.2 Lines and Boxes Created with the Forms Editor (see chapter 6)

| | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| Order number [] Batch number [] Total weight [] lbs Proportion compound 1 [] % Proportion compound 2 [] % Proportion compound 3 [] % | |
| | |

forms editor
fields editor
graphics editor
touch editor
16 31 HP
enhance video

exit

Exhibit 5.1.3 Unprotected Fields Created with the Fields Editor (see chapter 6)

| | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| Order number [] Batch number [] Total weight [] lbs Proportion compound 1 [] % Proportion compound 2 [] % Proportion compound 3 [] % | |
| <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; padding: 2px; text-align: center;">LOAD BATCH</div> <div style="border: 1px solid black; padding: 2px; text-align: center;">MIX BATCH</div> </div> <div style="border: 1px solid black; padding: 5px; text-align: center; margin-top: 10px;">DISCHARGE BATCH</div> | |

forms editor
fields editor
graphics editor
touch editor
24 80 HP
enhance video

exit

Exhibit 5.1.4 Touch Targets Created with the Touch Editor (see chapter 7)

5.2 How to Use the Editors

When creating screens with the editors, you use the eight softkeys on the bottom of the screen to choose functions, change menus, and set attributes.

Preparing to Use the Editors

Confirm that the terminal is configured as follows:

- On the **Global Configuration** menu, "Emulation" set to "HP" and "Screen Width" to 80
- On the **Terminal Configuration** menu, "Line/Page Mode" set to the application requirements
- On the **modes** menu, **[Block Mode]** and **[Remote Mode]** softkeys turned on (as indicated by an * on the screen labels).

Your host software may make these settings automatically. For instructions on making configuration settings manually, see chapters 2 and 5 of the *Installation, Configuration, and Maintenance Manual*.

To access the editors, first follow the procedure specified in the manual for your host forms-design package up to the point that you are ready to start laying out a screen, then select the **[editors]** softkey from the **System Menu**.

Screen Label Conventions

System softkey labels follow three labeling conventions:

- If the words in a label start with lowercase letters (**[device control]**, for example), the softkey takes you to the softkey menu of that name.
- If the words in a label start with capital letters, the softkey performs the function described. In some cases (**[Save Enhance]**, for example), it takes you to another softkey menu at the same time.
- Softkeys that turn a mode or function on or off (**[Block Mode]**, for example), display an asterisk (*) when they are in the On state.

Applying Video Enhancements

There are two ways to apply video enhancements, both accessed by pressing an **[enhance video]** softkey.

1. The video enhancements selected with the **enhance video** menu on the main **editors** menu and on the **modes** menu turn off automatically at the end of each line.
2. The video enhancements selected *within* the four editors apply both to the features you draw with the editor and to any characters you type while using that editor *anywhere on the screen*, until you turn the attribute off manually.

Note

- When you exit from an editor to the main **editors** menu, all the selections on that editor's **enhance video** menu return to their default settings.
- When you move between the Fields Editor and the Forms Editor directly, via the **[forms editor]** and **[fields editor]** softkeys at the f7 position, instead of via the main **editors** menu, enhancements selected in one of these editors are active in the other as well.

Before Using the Mouse

You can connect the HP Mouse either directly into the HP-HIL port on the back of the terminal or into the external HP-HIL keyboard. Before using the mouse, press the **Help** key on the keypad, then ensure that the **[Touch On]** softkey is turned on.

Instructions in this Manual

The procedure descriptions in chapters 6 through 8 use certain shorthand instructions to refer to specific operations with the HP Mouse.

| Instruction | Means |
|-----------------------|-----------------------------------------------------------------|
| Point | Move the mouse so that the pointer goes to the point specified. |
| Click | Press the specified mouse button and release it immediately. |
| Press | Press the specified mouse button and hold it down. |
| Press and drag | Move the mouse while holding down the specified button. |
| Release | Release the specified mouse button. |

Designing a Data-Entry Form with the Forms and Fields Editors

6.1 Using the Forms Editor

A typical data-entry form consists of a grid of lines and boxes containing labels and headings that the operator cannot change and *unprotected fields* in which the operator enters data to be sent to the host. Use the Forms Editor to draw the lines and boxes that will appear on the completed screen, then add labels, headings, and other text material. Later you will use the Fields Editor to define the unprotected fields.

Preparing the Forms Editor

1. From the **System Menu**, select **[editors]**.
2. From the **editors** menu, select **[forms editor]**.
3. Select **[Drawing Mode]** until the mode you want is highlighted.
4. Select **[Line Type]** until your choice is highlighted.
5. If you want any video enhancements, select **[enhance video]** to access the **enhance video** menu. Choose the video attributes you want, then select **[Save Enhance]**. You return to the Forms Editor.

Drawing Modes: Boxes

1. Move the cursor to the point where you want a corner of the box to be.
2. Select **[first corner]**.
3. If you have selected a video enhancement, and want the inside of the box to have this same enhancement, select **[Fill Box]**.
4. Move the cursor until you have stretched the box to the size you want, then select **[Anchor Box]**.

Mouse Method: Press left and drag the mouse to position the first corner of the box. Still pressing left, click right, drag the mouse to stretch the box to size, then click right again to anchor the box.

Drawing Modes: Lines and Segments

Line Mode always draws a line from screen edge to screen edge. Segment Mode places a line segment between the two parallel lines closest to the cursor. Both line types can be horizontal or vertical; you change the orientation with the **[Line Orient'n]** softkey.

1. Move the line or segment into position.
2. To anchor the line or segment, select **[Anchor Line]** if you are in Line Mode or **[Anchor Segment]** if you are in Segment Mode.

Mouse Method: Press left and drag the line or segment into position. While still pressing left, click right to anchor the line or segment.

Drawing Mode: Cursor

1. Move the cursor to the point where you want the line to start.
2. Select **[From Cursor]**.
3. Move the cursor to the point where you want the line to end.
4. Select **[To Cursor]**.

Mouse Method: Press left and drag the pointer to where you want the line to start, then click right. Still pressing left, drag the pointer to the column where you want the line to end, then click right.

Removing Lines and Boxes

To remove the last line or box you drew, select **[Undo Last]**.

You can always use select "Erase" as the **[Line Type]** and redraw any line or box with blank lines.

Adding Oversized or Enhanced Characters

You can type the text on your form in 1x1, 1x2, 2x1, 2x2, 4x4, or 6x6 character sizes, and the text can have any combination of blinking, underline, and inverse video enhancements.

If you want to type oversized or enhanced characters

1. Select **[exit]** to go to the **editors** menu.
2. From the **editors** menu, select **[enhance video]**.
3. On the **enhance video** menu, select the desired character size and enhancements, then select **[Save Enhance]**.
4. Type in the labels and headings.

6.2 Using the Fields Editor

Having used the Forms Editor to draw the lines and boxes that will appear on the completed screen (a process described in section 6.1), you use the Fields Editor to define the unprotected fields in which the operator will enter data when the terminal is used in Forms Mode.

Preparing the Fields Editor

1. Select **[fields editor]** from the **editors** menu or from within the Forms Editor.
2. Select **[Drawing Mode]**, so that the drawing mode you want is highlighted. The two drawing modes for unprotected fields, Segment Mode and Cursor Mode, operate as do the segment mode and cursor mode options in the forms editor.
3. If you want put brackets around fields, select **[Bracket Field]**. (If you are using an HP Mouse, click right to toggle this softkey.)
4. Select **[enhance video]** to access the **enhance video** editor, choose the video attributes you want, then select **[Save Enhance]**.

Defining Unprotected Fields

Move the cursor to the row where you want the unprotected field.

In Segment Mode move the cursor to any character position between two vertical lines. To anchor the field, select **[Anchor Field]**.

Mouse Method: Press left and drag the cursor to the row where you want the field. While still pressing left, click right to anchor the field.

In Cursor Mode move the cursor to one end of the field being created, press **[From Cursor]**, then move to the other end of the field and press **[To Cursor]**. The field is anchored automatically.

Mouse Method: Point and click left to move the cursor to the point where you want the field to start. Press left and click right to select **[From Cursor]**. Still pressing left, drag the cursor to the point where you want the field to end. Click right to select **[To Cursor]**.

Defining Fields for Oversized Characters

1. From the **modes** menu, disable **[Remote Mode]**.
2. Select **[enhance video]** to access the **enhance video** menu, and choose the character size and any video enhancements you want the field to have.
3. Select **[Save Enhance]** to save your selections. (You return to the **modes** menu.)

4. Move the cursor to the position where you want the field to start, then type $\text{F} \text{I}$.
5. Using the space bar (**not** the $\text{F} \text{I}$ key), move the cursor to where you want the field to end.
6. Type $\text{F} \text{I}$.

The unprotected field is now defined with the character size and video attributes you selected and characters entered into this field will be transformed automatically to that character size.

Removing Unprotected Fields

To remove the last unprotected field you anchored, select **[Undo Last]**. (This method does not work if you have exited to the main **editors** menu since you anchored the field.)

To remove any other unprotected field, you must exit to the **System Menu** and use the **Delete Line** key on the external keyboard.

To remove an oversized unprotected field n character spaces high, place the cursor in the first column of the row above it and press **Delete Line** n times.

Testing Unprotected Fields

To make sure you have defined an unprotected field properly

1. Go to the **modes** menu and ensure **[Remote Mode]** is not selected.
2. Type $\text{F} \text{W}$ to place the terminal in Forms Mode.

The cursor will move to the first position in the first unprotected field.

3. Type in characters.

When the cursor reaches the end of the field, the terminal will beep and the cursor will move to the start of the next field (if there is one) or return to the start of the current field.

If the results of steps two and three do not occur as described and it is necessary to redefine the fields, type $\text{F} \text{X}$ to exit Forms Mode, return to the Fields Editor and make the necessary changes.

For more details on Forms Mode, see section 3.5.

Designing Touch Targets with the Touch Editor

7.1 Using the Touch Editor

With the Touch Editor, you can create touch targets that will let the terminal operator send information by simply touching areas of the screen. When triggered, these targets generate a report string that is either processed locally, sent to the host, or sent out the auxiliary port.

Defining How the Target Looks

1. From the **editors** menu, select **[touch editor]**.
2. From the **touch editor** menu, select **[create target]**. The target you will be working on appears in the upper-left corner of the screen.
3. To change the border type, select **[Border Type]**. (Note that an "Erase" border occupies screen space and overwrites with spaces anything previously drawn at its location.)
4. To change the video enhancements, select **[enhance video]** to display the **enhance video** menu, choose new attributes, then select **[Save Enhance]**. The target reappears and its border displays the video attributes specified.
5. To control whether the target will invert when touched, select **[Inverted Area]**. You can have the following areas invert:
 - "Large" -both the inside of the target and the border invert
 - "Small" -just the inside of the target invert
 - "None" -no inverted area.
6. To move the target, touch the screen where you want the target to be. Use cursor keys for fine positioning. (With the HP Mouse, press left, and drag the target into position, then Release Left.)
7. To change the size of the target, select **[Operat'n]** to highlight **Size**. (With the HP Mouse, click right).
8. Move the cursor to stretch the target to the size and shape you want. (With the HP Mouse, press left and drag the target into shape.)
9. To anchor the target, select **[Anchor Target]** (With the HP Mouse, press left and click right.)

[Undo Last]

If you see something wrong with the target after you anchor it, but you are still on the **create target** menu, select **[Undo Last]**. You can then change any of the selections on this menu and anchor the target again.

Defining Target Operations

1. Exit from the **create target** menu, to the main touch editor menu.
2. Make sure the cursor is inside the target, then select **[target operat'n]**.

3. Use the **[Report Dest'n]** softkey to highlight the desired destination:
 - **Transmit.** The string is transmitted to the host
 - **Aux.** The string is sent out the Auxiliary Port (Port 2)
 - **Normal.** In Local Mode, the string will be processed locally; in Remote Mode, the string will be sent to the host
 - **Local.** The string is processed at the terminal.
4. Use the **[Trigger Type]** softkey to highlight the trigger type:
 - **On-touch.** Touching the target sends the "On" report string
 - **On-release.** Removing your finger from the target sends the "On" report string. This option allows the operator to avoid triggering the wrong target. Sliding the finger away from the target instead of lifting it off prevents the target from triggering.
 - **Both.** Touch the target to send the "On" string; release to send the "Off" string.
 - **Toggle.** Touching the target sends the "On" report string. Touching it a second time sends the "Off" report string.
5. If you want the terminal to beep each time the operator triggers the target, enable the **[Feedback Beep]** softkey (* showing).

Writing Report Strings

Note that **[target operat'n]** on the main touch editor lets you write report strings while the corresponding softkey on the **create target** menu does not.

1. From the main Touch Editor menu, making certain that the cursor is on the touch target for which you are defining report strings, select **[target operat'n]**.
2. Select **[Edit Report]**.
3. Type in the "On" string. If the target has "Both" or "Toggle" as the trigger type, move to the start of the "Off" field and type that string in.
 To embed control codes select **[Display Functns]** when you reach the point where you need to include control characters. To type the E_L character, select the **[ESC]** softkey. To embed other control characters, type the usual control sequence (there is an ASCII table in appendix A.3). Be sure to turn off **[Display Functns]** before you leave this menu.
 To erase the displayed strings quickly, select **[Default Values]**. To erase the displayed strings and exit to the **target operat'n** menu, select **[exit]**.
4. Select **[Save Changes]** to save the strings you have defined and return to the **target operat'n** menu.

7.2 Testing and Modifying Targets

Once you have finished designing the screen, test it to make sure the targets look and operate the way you want. Make any needed changes and add labels, then you are ready to send the screen to the host.

Using [edit target]

To edit a target, place the cursor on the target and select the **[edit target]** softkey on the **touch editor** menu. This makes all the characteristics of the target available for editing. The target is also unanchored, and if not anchored again at the end of the editing process, the target will disappear.

Duplicating Existing Targets

Last Target Anchored Until you exit from the Touch Editor menus to the **editors** menu, all the characteristics you chose for the last target you anchored remain selected, except for the report string. To copy the last target you anchored, place the cursor in the target and from the **touch editor** menu select **[create target]**. This creates a new "template" that you treat as a new target to be anchored and given report strings.

Other Targets If you want to copy a target other than the last one you anchored, you must select it by putting the cursor in the target and selecting the **[copy target]** softkey from the **touch editor** menu. Only the size and shape of the original are given to the template; you must add the other features.

Deleting Targets

To delete any touch target

1. go to the **touch editor** menu
2. position the cursor inside the target you want to delete.
3. select **[edit target]**.
4. select **[exit]**.

The target is deleted from the screen.

Testing Targets

Before testing, go to the main **editors** menu (targets cannot be triggered while in an editor). Note that targets generating a local report string do so at the cursor position, therefore you should ensure that the report string will not overwrite the text on your screen.

To test a target that has a local destination, trigger it to confirm that the inverted area, feedback beep, trigger type, and report string are as intended. (You will then have to erase the report string from the screen.)

Sending Screens to the Host

If the target's destination is not local, you can trigger it to confirm that the inverted area, feedback beep, and trigger type are as intended. To check the report destination, put the cursor on the target and select **[target operation]** from the **[Touch Editor]** menu. The report destination will be highlighted.

Before sending a screen containing touch targets to the host, you must ensure that the **[Send Touch]** softkey on the **device modes** menu is on.

The maximum length for a touch target report string is 80 characters and the total number of characters for all touch target report strings is 1K.

If the screen meets the above requirements, send it to the host by following the procedures in the manual for your host package.

Designing Process Graphic Diagrams with the Graphics Editor

8.1 Using the Graphics Editor

The Graphics Editor lets you select and “paste” ISA Characters, HP and IT Line-drawing Characters, and Roman-8 alphanumeric characters on the screen. It is also used to copy, move, and delete sections of the screen.

Accessing the Graphics Editor

1. If the **System Menu** is not already displayed, press **f** on the keypad or **User System** on the external keyboard.
2. Select **[editors]** to display the **editors** menu.
3. Select **[graphics editor]**.

The main Graphics Editor menu is displayed.

Selecting and Pasting Characters

1. From the **graphics editor** main menu, select **[select char]**. (If you have the HP Mouse, click right.)

The **select char** menu and the current character set are displayed.

- To change character sets or character size, or to add video enhancements, select **[enhance video]** and change the selections on the **enhance video** menu.

Select **[Save Enhance]** to save the changes and return to the **select char** menu.

The desired character set is now displayed, and the currently selected character appears at the lower right in the desired size and video enhancements.

- To select a character within the displayed set, move the cursor until the character you want is highlighted in the character set and displayed at the lower right.

Select **[select char]**. (With the HP Mouse, press left and click right.)

The character set disappears, and the character you selected is displayed with the size and attributes you selected in the current cursor position.

2. Move the cursor to drag the character to the point where you want to paste it.
3. To paste the character into position, select **[Paste]**. (With the HP Mouse, press left and click right.)

Selecting Screen Areas

Areas of the screen have on or off pixels that are parts of characters, boxes, and lines, or that are the video enhanced areas of touch targets or unprotected fields. These areas can be copied and moved, cut out and moved, or

cut out and deleted. These operations do not affect the underlying targets or fields in the defined area.

Defining Areas

1. From the **graphics editor** main menu, select **[select area]**.
2. Move the cursor to a corner of the area you are selecting.
3. Select **[Operat'n]** to shift the message window highlight from **Move** to **Size**. (With the HP Mouse, press left and click right.)
4. Move the cursor to the next point you want to be a corner. (The cursor draws a line as it moves.)
5. Move the cursor down, enclosing the area you want to select in a box. (If you try to enclose too large an area, the cursor moves off the box, and the box stays at its maximum size.)
6. If you want the blanks characters in the area being defined to overwrite the area to which it will be moved, select **[Backgrnd]** to highlight **Opaque**. With **Transparent** the existing characters will remain behind the spaces in the defined area.

To Copy An Area

1. Select **[Copy Area]**. The **graphics editor** main menu is displayed, and the rectangle you used to define the area disappears, but the area is still defined.
2. Move the copied area to its new location and select **[Paste]**; the original remains. (With the HP Mouse, press left and click right.)

The copy is now pasted into position on the screen and may be pasted elsewhere as well.

To Cut An Area

Follow the the same procedure for copying an area, except select **[Cut Area]** in step 1. Unlike the copy operation, cutting an area removes the original.

To Delete An Area

To delete an area, define it, cut it, then select **[exit]**, **[select char]**, or **[select area]** to go to another menu. The area is blanked when the menu changes.

[Undo Last] Softkey

Selecting **[Undo Last]** will undo the last cutting, pasting, or copying operation you carried out. If the last operation consisted of undoing a previous operation, **[Undo Last]** undoes the undo.



APPENDIXES

A

Generating Characters at the External Keyboard

A.1 Generating Characters in HP Mode

When the terminal is configured to emulate an HP 2392A, the default character set generated by the keypad or the external keyboard is the Roman 8 set, which consists of the standard USASCII set plus the Roman Extension characters. The three other character sets that the terminal can generate in HP mode consist of line-drawing and other graphics characters. The easiest way to work with these characters is to use the Graphics Editor built into the terminal. However, if you have an external keyboard, you can also enter escape sequences and control codes that allow you to type these characters from the keyboard.

Character Sets Available

When you select the HP option in the "Emulation" field on the **Global Configuration** menu, the HP 3082 emulates an HP 2392A terminal and can access the following character sets:

- the Roman 8 set, comprising
 - a. either the standard 128 USASCII characters shown in exhibit A.3.1 or a substitute table if a non-USASCII keyboard is configured, plus
 - b. the Roman Extension characters shown in exhibit A.3.2
- the standard HP line-drawing characters (exhibit A.3.3)
- ISA graphics characters (exhibit A.3.4)
- HP 3082 Special graphics characters (exhibit A.3.5).

You cannot temporarily change the emulation to ANSI or EM52 to combine DEC characters on the same screen with HP characters, because changing the emulation mode clears display memory.

Effects of Configuration

Besides what type of terminal is to be emulated, two other configuration parameters affect the generation of character sets: the number of data bits to be used for host communications (specified on the **Host Port Configuration** menu), and the type of keyboard (specified on the **Global Configuration** menu).

Data Bits. You can choose either of two values for the "Data Bits" field on the **Host Port Configuration** menu: 7 or 8. If you choose 7, the only alphanumeric characters you can generate are those shown on your keyboard. If you choose 8, you can also access the full set of Roman Extension characters (these are mainly accented letters, plus some special symbols and non-English punctuation marks). For non-USASCII keyboards, the value selected in this field also determines what code values the terminal will use

to transmit accented letters and some other special characters to the host. Details for USASCII and non-USASCII keyboards are presented below.

Keyboard. In HP mode, you can use the HP 3082 with a USASCII keyboard or with any of 16 National keyboards. You set the "Keyboard" field on the **Global Configuration** menu to match the keyboard you have connected. In this way, you are telling the terminal to use the 128-character ASCII table appropriate to the language of that keyboard. For the sake of clarity, this section first tells how to work with the USASCII keyboard, then explains how using another keyboard changes operations.

USASCII keyboard

If the terminal is configured with the USASCII keyboard, whenever it is powered on, it defaults to the standard USASCII character set shown in exhibit A.3.1, plus the Roman Extension set shown in exhibit A.3.2. The former is available regardless of whether you are using 7 or 8 data bits to transmit to the host. The latter is available only when 8 data bits are being used. The method of accessing line-drawing and graphics characters is the same in both cases.

7-bit operation

When the "Data Bits" field on the **Host Port Configuration** menu is set to 7, you can generate only the standard USASCII characters appearing on your keyboard and shown in the table in exhibit A.3.1. To generate any character in columns 2 through 7 of this table, simply press the corresponding key on the keyboard. To generate any of the control characters in column 0 or 1, hold down the **CTRL** key, then press the key for the character in the same row four columns to the right.

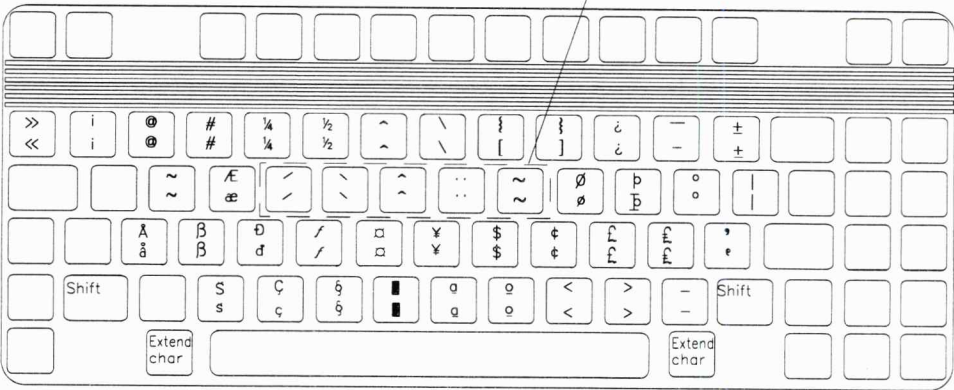
8-bit operation

When the "Data Bits" field on the **Host Port Configuration** menu is set to 8, you can generate all the standard USASCII characters as described above, but you can also generate the characters of the Roman Extension set (see exhibit A.3.2). To do so, hold down the **Extend Char** key, then press the key that is labeled with the character you want in exhibit A.1.1.

Note

No matter what keyboard is specified during configuration, the Roman Extension characters are always mapped to the same physical locations on the keyboard.

Diacritical Characters*



* When the diacritical characters are typed, the cursor does not move to the next column, but allows you to type another character without overtyping the diacritical. This feature allows you to type the accented characters required in some languages.

Exhibit A.1.1. Keyboard Map for the Extended Characters

Using Alternate Characters

At any given time, the HP 3082 can produce either of two character sets, the *base set* or the *alternate set*. The base set is the one the keyboard defaults to after you power on the terminal or enter an \S (shift-in) code (control-O). In HP mode, the base set is always Roman 8. The alternate set is the one the keyboard generates after you enter an \S_0 (shift-out) code (control-N).

The default alternate set is the HP line drawing set. You can specify other available sets by using the following escape sequences.

| Specifying the Alternate Set | |
|----------------------------------|-------------------------------|
| To specify: | Use: |
| the HP line-drawing set | $\text{E}_\text{c} \text{)B}$ |
| the ISA graphics set | $\text{E}_\text{c} \text{)G}$ |
| the HP 3082 special graphics set | $\text{E}_\text{c} \text{)I}$ |

After using one of the above escape sequences to specify the alternate set, you access it by typing $\text{CTRL} + \text{N}$ to enter the \S_0 code. To display a given graphics character, you then type the alphanumeric character shown below it in exhibit A.3.4, A.3.5, or A.3.6.

To return to the Roman 8 set, type $\text{CTRL} + \text{O}$ to enter the \S code.

Note that the $\$0$ code affects all characters from the point where you enter it to the next $\$1$ code, the next video-enhanced character, or the end of the line, whichever comes first.

Because the $\$1$ and $\$0$ codes are not normally displayed when you enter them, you must be careful to pair them evenly if you shift out and in several times on the same line. If you enter extra codes by mistake, they could have unintended effects later on. You cannot delete these codes as easily as normal characters. To get rid of them, you must either delete the entire line or insert enough characters or blank spaces on the line to push the undesired codes off the end of the line.

Non-USASCII Keyboards

If you are using a keyboard other than the USASCII keyboard, you must specify this keyboard in the "Keyboard" field on the **Global Configuration** menu, or it will not work properly. The effects of using a non-USASCII keyboard are as follows.

7-bit Data Communications

When you are using a national keyboard, as long as you have configured the terminal and the host software to match it and have not shifted out to the alternate character set, pressing a given key will cause the character shown on the keycap to be displayed on the screen.

However, if you have the "Data Bits" field on the **Host Port Configuration** menu set to 7, only 128 character values are available for host communications. Hence, the terminal cannot directly use the Roman Extension set (ASCII values 161 to 255) to send the host the non-USASCII characters and accent marks your keyboard generates. Instead, the terminal substitutes USASCII characters, as shown in exhibit A.3.2. The host package, if properly configured, decodes these characters properly. The terminal decodes transmissions from the host in a similar fashion.

Alternate Character Sets

Exhibits A.3.5 through A.3.7 show which key to press on the USASCII keyboard to generate alternate characters, as described earlier in this section. But when you are configured with a non-USASCII keyboard, some of the USASCII characters are replaced, as shown in exhibit A.3.2. To generate the alternate character corresponding to one of these USASCII characters, press the key for the substitute Roman 8 character on the national keyboard (as shown in Exhibit A.3.2).

Keys with Accented Letters

When a keycap on a non-USASCII keyboard shows a letter combined with an accent mark, this key displays that combination on the screen with a single keystroke, and generates a single ASCII value assigned to that combination.

If the terminal is configured for 7-data-bit transmission, the value for the combination lies in the range 0 to 127, displacing one of the USASCII characters. (In communications with the host, the USASCII character substitutes

Keys with Accent Marks Alone

for the non-USASCII character, as described in "7-bit data Communications" above.)

If the terminal is configured for 8-data-bit transmission, the accented letter is accessed directly from the Roman Extension set, and its value lies in the range 161 to 255.

Some keys on non-USASCII keyboards show an accent mark alone. Depending on what keyboard and how many data bits you are configured for, some of these keys just generate their characters in the usual way, while others let you combine the accent mark with a letter. Accent marks that can be combined in this way are called *diacritical* marks. Exhibit A.3.2 indicates the characters that are treated as diacriticals in 7-bit operation and Exhibit A.3.4 shows the diacriticals in 8-bit operation.

If you press a key that generates a diacritical mark, this mark is displayed, but the cursor does not move. If you then type a letter that forms a valid combination with that mark in the language of your keyboard, that combination then appears on the screen. What character values are assigned to the mark and the letter and how they are transmitted to the host in Character Mode depends on whether you are using 7 data bits or 8.

When 7 data bits are used, the accent mark has its own value in the range 0 to 127, and in Character Mode, this value is sent to the host as soon as you type the accent mark. When you then type a valid letter, the value for that letter, also in the range 0 to 127, is sent.

When the terminal is configured for 8-data-bit transmission, no value is sent when you first type the accent mark. When you then type a valid letter, the value for that combination in the Roman Extension set (range 161 to 255) is sent to the host.

Invalid combinations. If the data input immediately after a diacritical mark does not form a valid combination with it, the terminal responds in the following ways. (All references to codes being sent to the host assume you are on-line in Character Mode.)

- If you key in an invalid alphabetic character, it overwrites the accent on the screen, the cursor moves to the next position, and the code for that character is transmitted.
- If you key in a space, the accent remains on the screen and the cursor moves to the next position. In 7-bit mode, the code for the space is sent; in 8-bit mode, the code for the accent is sent.
- If you press the Return key and you are in 7-bit mode, the accent mark has already been sent, so the terminal processes the code from the Return key immediately. If you are in 8-bit mode, the terminal sends the code for the accent mark first, then processes the Return key code.
- If you key in an escape sequence, the accent disappears. The next char-

acter entered after the escape sequence is displayed at the cursor position.

- If the host computer sends characters to the terminal between the first and second keystrokes, it processes them normally, then accepts the second keystroke (valid or invalid) and handles it as described above.

A.2 Generating Characters in DEC Mode

When the terminal is configured to emulate a DEC VT100 or VT52 terminal, the default character set generated by the keypad or the external keyboard is the standard USASCII set. The other character sets that the terminal can generate in DEC mode consist mainly of graphics characters. The easiest way to work with these characters is to use the Graphics Editor built into the terminal. However, if you have an external keyboard, you can also enter escape sequences and control codes that allow you to type these characters from the keyboard.

Effects of Configuration

The characters that the keyboard can generate at any given time depend on which DEC terminal the HP 3082 has been configured to emulate. If the "Emulation" field is set to "ANSI", the terminal emulates a DEC VT100, and can generate the following character sets:

- the standard 128 USASCII characters
- the standard ANSI line-drawing characters
- ISA graphics characters

If the "Emulation" field is set to "EM52", the terminal emulates a DEC VT52, and can generate only the first two character sets listed above.

You cannot temporarily change the emulation setting to HP to combine HP characters on the same screen with DEC characters, because this change clears display memory.

Note

When used to emulate a VT100 or VT52, the HP 3082 supports only the USASCII keyboard and 7-bit data transmission.

USASCII Characters

When configured to emulate a DEC VT100 or VT52 terminal, the HP 3082 defaults to the standard 128-character USASCII set (exhibit A.3.1) after a power-on or hard reset.

Alternate Characters

At any given time, the HP 3082 can produce either of two character sets, the *base set* or the *alternate set*.

VT52 emulation

When the HP 3082 is emulating a VT52 terminal, the base set is always standard USASCII, and the alternate set is always the ANSI line-drawing characters (which the HP 3082 uses instead of the line-drawing characters found

on a VT52). To generate the alternate set, type $\text{E} \text{ F}$. To switch back to the base set, you type $\text{E} \text{ G}$.

VT100 emulation

When the HP 3082 is emulating a VT100 terminal, you have more choices. You can use escape sequences to assign any of the three character sets listed below to be the base set, and any of the same three to be the alternate set. Once you have done so, you use the S_0 and S_1 codes as usual to switch between the two.

The escape sequences used to assign the base and alternate sets are shown in the following tables.

| To specify as the base set: | Use: |
|-----------------------------|------------------------|
| the USASCII set | $\text{E} \text{ (A)}$ |
| the ANSI line-drawing set | $\text{E} \text{ (0)}$ |
| the ISA graphics set | $\text{E} \text{ (2)}$ |

| To specify as the alternate set: | Use: |
|----------------------------------|-----------------------|
| the USASCII set | $\text{E} \text{)A}$ |
| the ANSI line-drawing set | $\text{E} \text{)0}$ |
| the ISA graphics set | $\text{E} \text{)2}$ |

After using one of the above escape sequences to specify the alternate set, you access it by holding down **CTRL** and pressing **N** to enter the S_0 code. To display a given graphics character, you then type the alphanumeric character shown below it in exhibit A.3.5 or A.3.6. The character set remains in effect until the terminal receives a S_1 character.

A.3 Character Tables

The tables in appendix A.3 serve as references for appendixes A.1 and A.2.

| Exhibit A.3.1. USASCII Character Set | | | | | | | | | |
|--------------------------------------|----------------------|--------|---------|---------|---------|---------|---------|---------|----------|
| Hex | left digit | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Decimal col + row | 0 + | 16 + | 32 + | 48 + | 64 + | 80 + | 96 + | 112 + |
| 0 | 0 | NUL | DLE* | SP | 0 | @ | P | ' | p |
| 1 | 1 | SOH* | DC1 | ! | 1 | A | Q | a | q |
| 2 | 2 | STX* | DC2* | " | 2 | B | R | b | r |
| 3 | 3 | ETX* | DC3 | # | 3 | C | S | c | s |
| 4 | 4 | EOT* | DC4* | \$ | 4 | D | T | d | t |
| 5 | 5 | ENQ | NAK* | % | 5 | E | U | e | u |
| 6 | 6 | ACK* | SYN* | & | 6 | F | V | f | v |
| 7 | 7 | BEL | ETB* | ' | 7 | G | W | g | w |
| 8 | 8 | BS | CAN | (| 8 | H | X | h | x |
| 9 | 9 | HT | EM* |) | 9 | I | Y | i | y |
| A | 10 | LF | SUB | * | : | J | Z | j | z |
| B | 11 | VT | ESC | + | ; | K | [| k | { |
| C | 12 | FF | FS* | , | < | L | \ | l | |
| D | 13 | CR | GS* | - | = | M |] | m | } |
| E | 14 | SO | RS* | . | > | N | ^ | n | ~ |
| F | 15 | SI | US* | / | ? | O | _ | o | DEL |

The USASCII set is available in both HP and DEC modes.

In HP mode, when the terminal is configured for a USASCII keyboard, the USASCII character set is the power-on default in both 7-data-bit and 8-data-bit operation. When the terminal is configured for a different keyboard, and is used in 7-bit mode, some of the characters in the above table are replaced with non-English characters, as shown in Exhibit A.3.2.

In DEC mode, the terminal is always used with a USASCII keyboard, the USASCII set is always the power-on default, and the terminal communicates only with 7 data bits. The control codes whose mnemonics are marked with an * in columns 0 and 1 above are ignored if received in DEC Mode.

To generate the ASCII control codes whose mnemonics are shown in columns 0 and 1, hold down the **CTRL** key and press the key for the alphanumeric character four columns to the right in the same row.

Exhibit A.3.2
USASCII Characters Replaced by National Characters In HP 7-bit Mode

| Keyboard | Characters | | | | | | | | | | | | | |
|--------------------------------------|------------|---|---|---|---|---|---|---|----|---|---|---|---|----|
| USASCII | # | ' | < | > | @ | [| \ |] | ^ | ' | { | | } | ~ |
| Danish | § | ' | < | > | @ | Æ | Ø | Å | ^ | ' | æ | ø | å | " |
| Dutch | # | ' | < | > | @ | ç | \ | § | ^ | ' | f | | ' | " |
| Finnish | # | ' | < | > | É | Ä | Ö | Å | Ü | é | ä | ö | å | ü |
| Flemish and French | £ | ' | < | > | à | ° | ç | § | ^½ | ' | é | ù | è | "½ |
| English Canadian and French Canadian | # | ' | < | > | @ | [| ç |] | ^ | ' | é | Ç | É | " |
| Swiss French/German | £ | ' | é | è | à | ° | ç | § | ^ | ' | ä | ö | ü | " |
| German | £ | ' | < | > | § | Ä | Ö | Ü | ^ | ' | ä | ö | ü | ß |
| Italian | £ | ' | < | > | § | ° | ç | é | ^ | ù | ù | à | è | ì |
| Norwegian | # | ' | < | > | @ | Æ | Ø | Å | ^ | ' | æ | ø | å | " |
| European Spanish | # | ½ | < | > | @ | í | Ñ | ¿ | ° | ½ | ' | ñ | ç | "½ |
| Latin Spanish | # | ½ | < | > | @ | í | Ñ | ¿ | ^ | ½ | ' | ñ | ç | "½ |
| Swedish | # | ' | < | > | É | Ä | Ö | Å | Ü | é | ä | ö | å | ü |
| U.K. | £ | ' | < | > | @ | [| \ |] | ^ | ' | { | | } | ~ |

Characters marked with a ½ are diacritical marks in 7-bit operation

| Exhibit A.3.3 Roman Extension Characters (HP mode only) | | | | | | | | | |
|---------------------------------------------------------|----------------------|----------|----------|----------|----------|----------|----------|----------|----------|
| Hex | left digit | 8 | 9 | A | B | C | D | E | F |
| right digit | Decimal col + row | 128 + | 144 + | 160 + | 176 + | 192 + | 208 + | 224 + | 240 + |
| 0 | 0 | | | | — | à | À | Á | Ð |
| 1 | 1 | | | À | | ê | î | Ã | Þ |
| 2 | 2 | | | Â | | ô | Ø | ä | |
| 3 | 3 | | | Ê | ° | û | Æ | Ð | |
| 4 | 4 | | | Ê | Ç | á | â | đ | |
| 5 | 5 | | | Ë | ç | é | í | Í | |
| 6 | 6 | | | Ï | Ñ | ó | ø | Ì | — |
| 7 | 7 | | | Ï | ñ | ú | æ | Ó | ‡ |
| 8 | 8 | | | ˆ | ı | à | Ä | Ò | ½ |
| 9 | 9 | | | ˘ | ı | è | ì | Õ | ¾ |
| A | 10 | | | ˆ | œ | ò | Ö | õ | º |
| B | 11 | | | ˘ | £ | ù | Ü | Š | « |
| C | 12 | | | ˘ | ¥ | ä | É | š | ■ |
| D | 13 | | | Û | § | ë | ï | Ú | » |
| E | 14 | | | Û | f | ö | ß | Ÿ | ± |
| F | 15 | | | £ | ¢ | ü | Ô | ÿ | |

When the terminal is configured to communicate with 7 data bits and is being used with a non-USASCII keyboard, those Roman Extension characters needed to complete the national character set are substituted into the 128-character ASCII table as shown in exhibit A.3.2, and take values in the range 0 to 128.

| Exhibit A.3.4 Diacritical Marks Available in 8-bit Operation | |
|--------------------------------------------------------------|-------------------|
| Keyboard | Diacritical Marks |
| USASCII | |
| Danish | ´ ˘ ¨ |
| Dutch | ˆ ˘ ¨ |
| Finnish | |
| Flemish and French | ˆ ¨ |
| English/French Canadian | ˆ ˘ ¨ |
| Swiss French/German | ˆ ˘ ¨ |
| German | |
| Italian | ˆ |
| Norwegian | ˘ ¨ |
| European Spanish | ˘ ¨ |
| Latin Spanish | ˘ ¨ |
| Swedish | |
| U.K. | |
| [Extend Char] Key | ˆ ˘ ¨ ~ |

Exhibit A.3.5. HP Line Drawing Characters (HP mode only)

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|----|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ⌈ | ⌋ | ⌈ | ⌋ | ⌈ | ⌋ | ⌈ | ⌋ | ⌈ | ⌋ | ⌈ | ⌋ | ⌈ | ⌋ | ⌈ | ⌋ | |
| | ! | " | # | \$ | % | & | ' | (|) | * | + | , | - | . | / | | |
| ⌈ | ⌋ | ⌈ | ⌋ | ⌈ | ⌋ | ⌈ | ⌋ | ⌈ | ⌋ | ⌈ | ⌋ | ⌈ | ⌋ | ⌈ | ⌋ | ⌈ | ⌋ |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | : | ; | < | = | > | ? | | |
| ⌈ | ⌋ | ⌈ | ⌋ | ⌈ | ⌋ | ⌈ | ⌋ | ⌈ | ⌋ | ⌈ | ⌋ | ⌈ | ⌋ | ⌈ | ⌋ | ⌈ | ⌋ |
| @ | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | | |
| ⌈ | ⌋ | ⌈ | ⌋ | ⌈ | ⌋ | ⌈ | ⌋ | ⌈ | ⌋ | ⌈ | ⌋ | ⌈ | ⌋ | ⌈ | ⌋ | ⌈ | ⌋ |
| P | Q | R | S | T | U | V | W | X | Y | Z | [| \ |] | ^ | _ | | |
| ⌈ | ⌋ | ⌈ | ⌋ | ⌈ | ⌋ | ⌈ | ⌋ | ⌈ | ⌋ | ⌈ | ⌋ | ⌈ | ⌋ | ⌈ | ⌋ | ⌈ | ⌋ |
| ' | a | b | c | d | e | f | g | h | i | j | k | l | m | n | o | | |
| ⌈ | ⌋ | ⌈ | ⌋ | ⌈ | ⌋ | ⌈ | ⌋ | ⌈ | ⌋ | ⌈ | ⌋ | ⌈ | ⌋ | ⌈ | ⌋ | ⌈ | ⌋ |
| p | q | r | s | t | u | v | w | x | y | z | { | | } | ~ | | | |

To access the HP line-drawing character set, first enter the sequence E_6B , then type **CTRL** + **N**. To display a specific character from the above table, you then proceed as follows.

If you are using a USASCII keyboard, simply type the letter shown under this character in this table.

If you are using a non-USASCII keyboard:

1. Check which USASCII character appears under this character in this table.
2.
 - If that USASCII character appears on your national keyboard, type that character.
 - If that USASCII character *does not* appear on your national keyboard:
 - a. Go to the table in exhibit A.3.2.
 - b. Find the USASCII character in the top row, then go down the column to see which national character replaces it on the keyboard you are using.
 - c. Type the national character thus located.

Exhibit A.3.6. ISA Graphics Characters

| | ! | " | # | \$ | % | & | ' | (|) | * | + | , | - | . | / |
|---|---|---|---|----|---|---|---|---|---|---|---|---|---|---|---|
| 1 | T | I | I | L | L | J | I | I | T | F | F | J | E | | |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | : | ; | < | = | > | ? |
| < | > | € | ƒ | ◀ | ▶ | ◀ | ▶ | ◀ | ▶ | ◀ | ▶ | ◀ | ▶ | ◀ | ▶ |
| @ | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O |
| W | 3 | E | ◀ | L | Γ | Γ | J | C | J | 3 | Γ | Γ | I | E | Z |
| P | Q | R | S | T | U | V | W | X | Y | Z | [| \ |] | ^ | _ |
| Σ | \ | / | X | I | ≡ | ≡ | | - | - | | | - | | ↑ | ↓ |
| ' | a | b | c | d | e | f | g | h | i | j | k | l | m | n | o |
| ▶ | ◀ | - | - | | | - | - | | | ✓ | Γ | T | ◀ | ▶ | |
| P | q | r | s | t | u | v | w | x | y | z | { | | } | ~ | |

To access the ISA graphics character set, first enter the sequence $\text{F}_2\text{)G}$ (if working in HP mode) or $\text{F}_2\text{)2}$ (if working in DEC mode). Then type **CTRL** + **(N)**. To display a specific character from the above table, you then proceed as follows.

If you are using a USASCII keyboard, simply type the letter shown under this character in this table. If you are using a non-USASCII keyboard (which you can do only in HP mode):

1. Check which USASCII character appears under this character in this table.
2.
 - If that USASCII character appears on your national keyboard, type that character.
 - If that USASCII character *does not* appear on your national keyboard:
 - a. Go to the table in exhibit A.3.2.
 - b. Find the USASCII character in the top row, then go down the column to see which national character replaces it on the keyboard you are using.
 - c. Type the national character thus located.

Exhibit A.3.7. HP 3082 Special Graphics Characters (HP Mode Only)

| | | | | | | | | | | | | | | | |
|---|---|---|---|----|---|---|---|---|---|---|---|---|---|---|---|
| | † | ‡ | • | • | • | • | • | • | • | • | • | • | • | • | • |
| | ! | " | # | \$ | % | & | ' | < | > | * | + | , | - | . | / |
| † | ‡ | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | : | ; | < | = | > | ? |
| † | ‡ | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| @ | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O |
| † | ‡ | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| P | Q | R | S | T | U | V | W | X | Y | Z | [| \ |] | ^ | _ |
| † | ‡ | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| ' | a | b | c | d | e | f | g | h | i | j | k | l | m | n | o |
| † | ‡ | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| P | q | r | s | t | u | v | w | x | y | z | { | | } | ~ | |

To access the HP 3082 Special graphics character set, first enter the sequence E_I . Then type $\text{CTRL} + \text{N}$. To display a specific character from the above table, you then proceed as follows.

If you are using a USASCII keyboard, simply type the letter shown under this character in this table. If you are using a non-USASCII keyboard (which you can do only in HP mode):

1. Check which USASCII character appears under this character in this table.
2. ■ If that USASCII character appears on your national keyboard, type that character.
■ If that USASCII character *does not* appear on your national keyboard:
 - a. Go to the table in exhibit A.3.2.
 - b. Find the USASCII character in the top row, then go down the column to see which national character replaces it on the keyboard you are using.
 - c. Type the national character thus located.

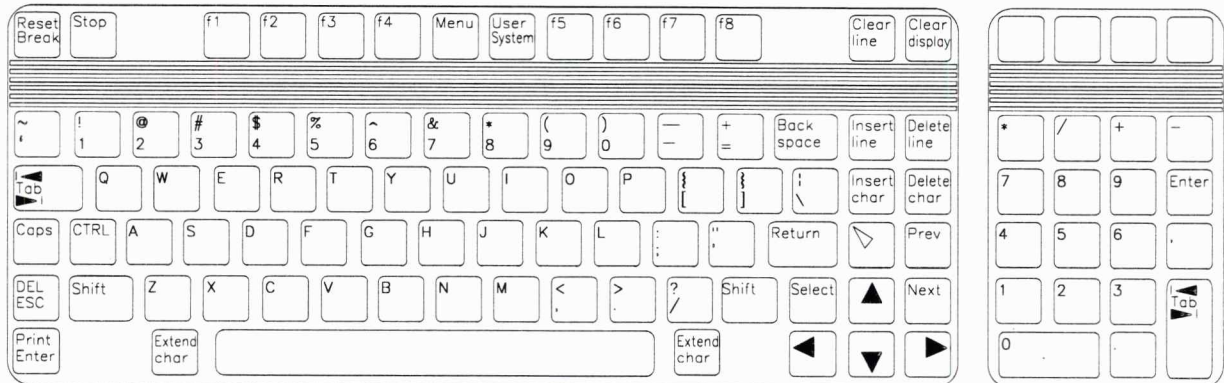
Exhibit A.3.8. ANSI Line-Drawing Characters (DEC mode only)

| | | | | | | | | | | | | | | | |
|---|---|---|---|----|---|---|---|---|---|---|---|---|---|---|---|
| | ! | " | # | \$ | % | & | ' | (|) | * | + | , | - | . | / |
| | ! | " | # | \$ | % | & | ' | (|) | * | + | , | - | . | / |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | : | ; | < | = | > | ? |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | : | ; | < | = | > | ? |
| @ | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O |
| @ | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O |
| P | Q | R | S | T | U | V | W | X | Y | Z | [| \ |] | ^ | _ |
| P | Q | R | S | T | U | V | W | X | Y | Z | [| \ |] | ^ | _ |
| + | ⌘ | ⌘ | ⌘ | ⌘ | ⌘ | ⌘ | ⌘ | ⌘ | ⌘ | ⌘ | ⌘ | ⌘ | ⌘ | ⌘ | ⌘ |
| ' | a | b | c | d | e | f | g | h | i | j | k | l | m | n | o |
| - | - | - | - | † | ‡ | ⊥ | τ | | ≤ | ≥ | π | ≠ | £ | • | ⌘ |
| P | q | r | s | t | u | v | w | x | y | z | { | | } | ~ | ⌘ |

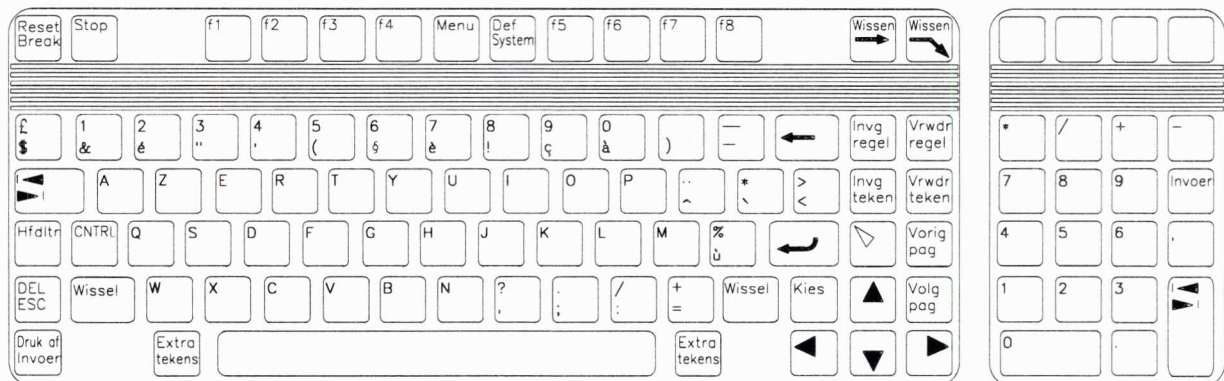
To access the ANSI line-drawing character set, first enter the sequence $\text{E} \text{J} 0$, then type $\text{CTRL} + \text{N}$ in VT100 mode or $\text{E} \text{F}$ in VT52 mode. To display a specific character from the above table, simply type the letter shown under this character.

Keyboards Available for the Industrial Touch

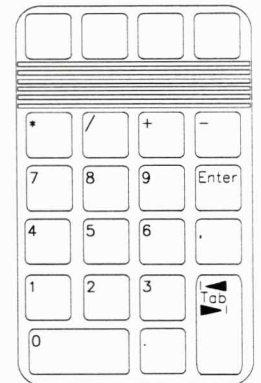
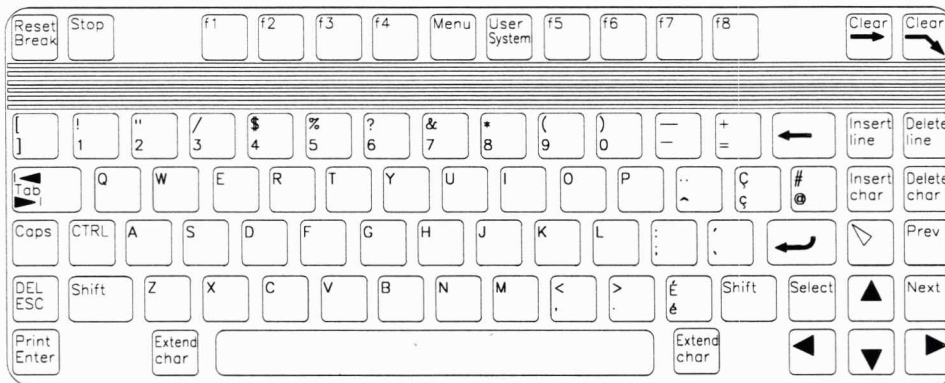
The Industrial Touch supports keyboards for 17 different national languages. These keyboards are illustrated here. The mechanics of generating characters at these keyboards are discussed in appendix A.



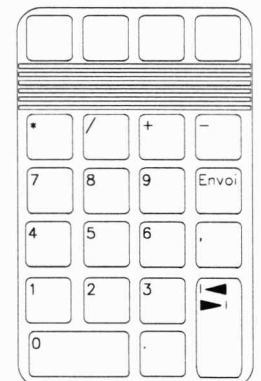
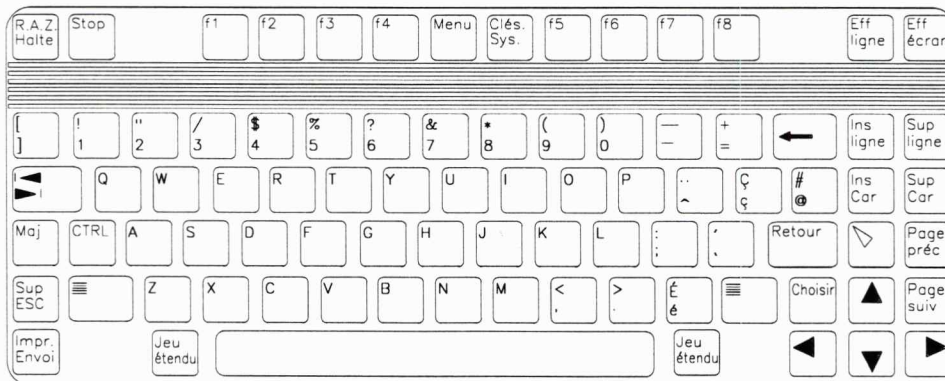
American (USASCII) Keyboard



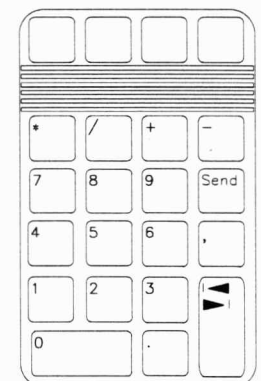
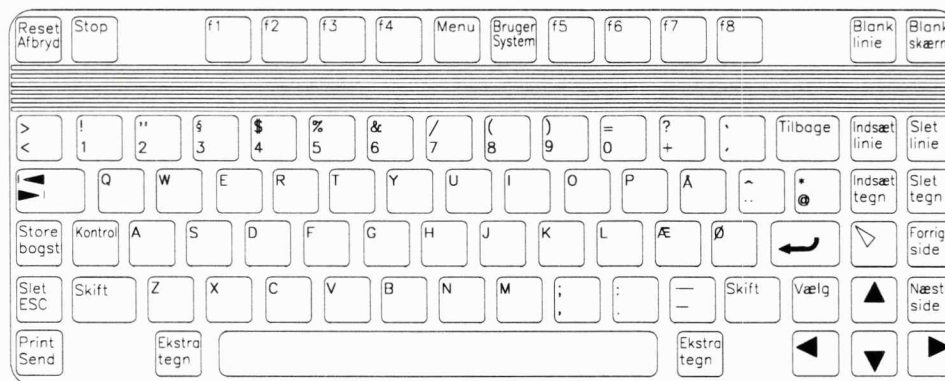
Belgian Keyboard



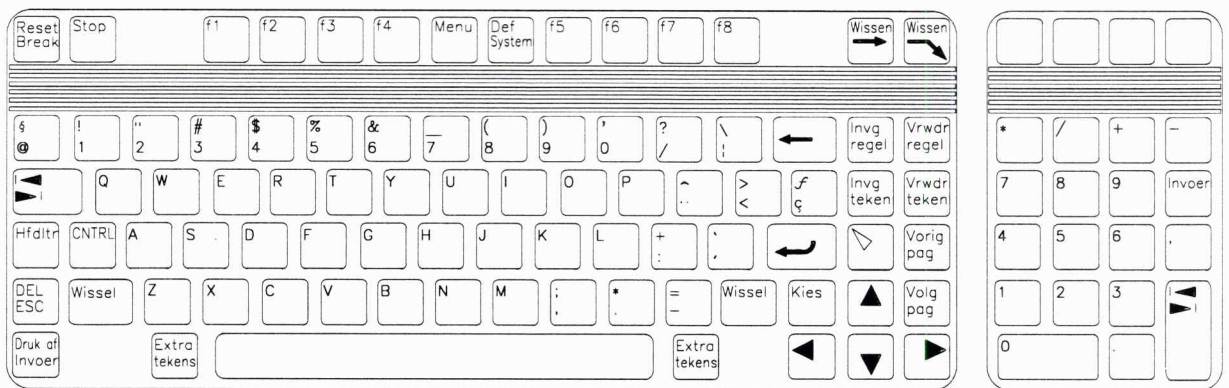
Canadian English Keyboard



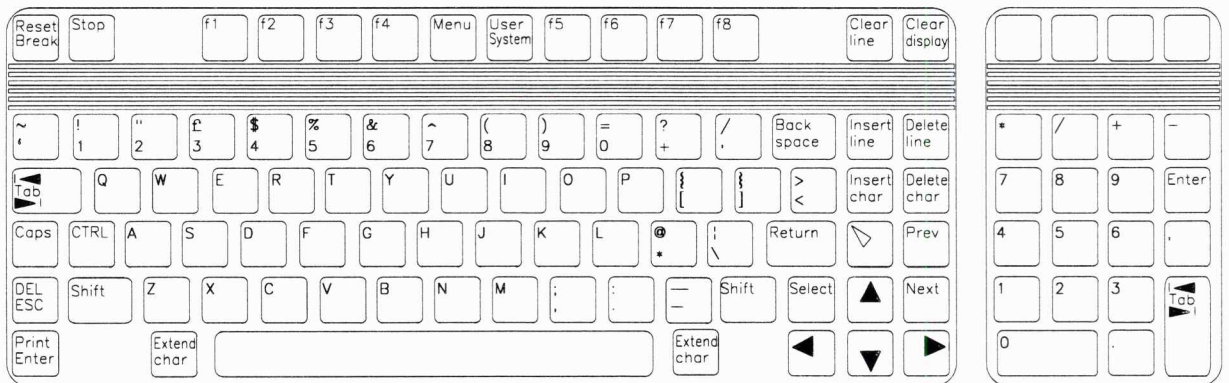
Canadian French Keyboard



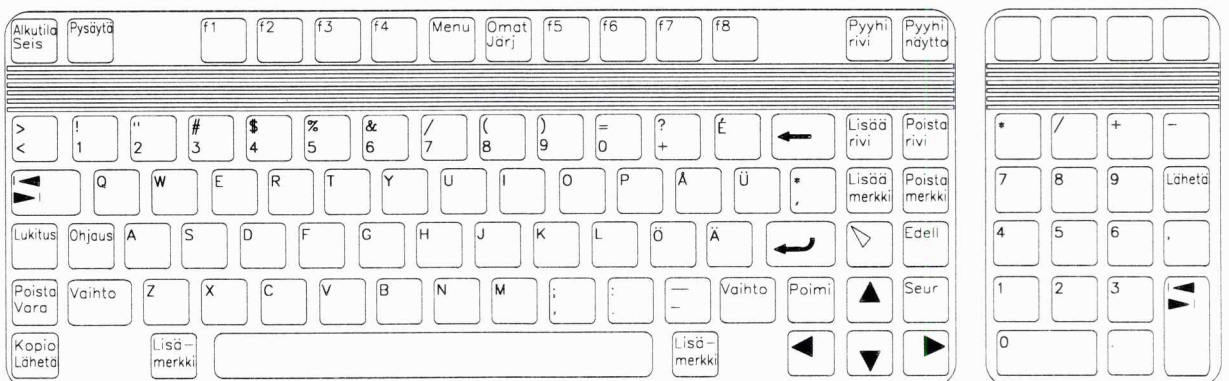
Danish Keyboard



Dutch Keyboard



English (UK) Keyboard



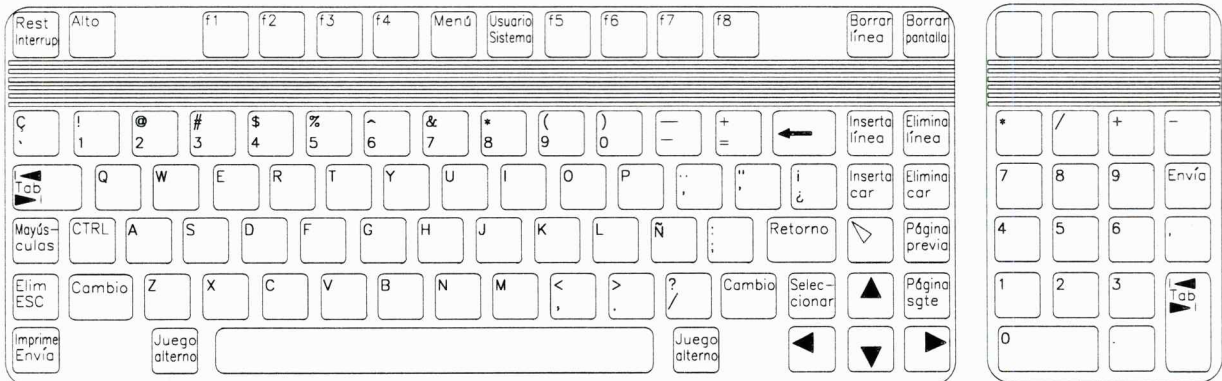
Finnish Keyboard



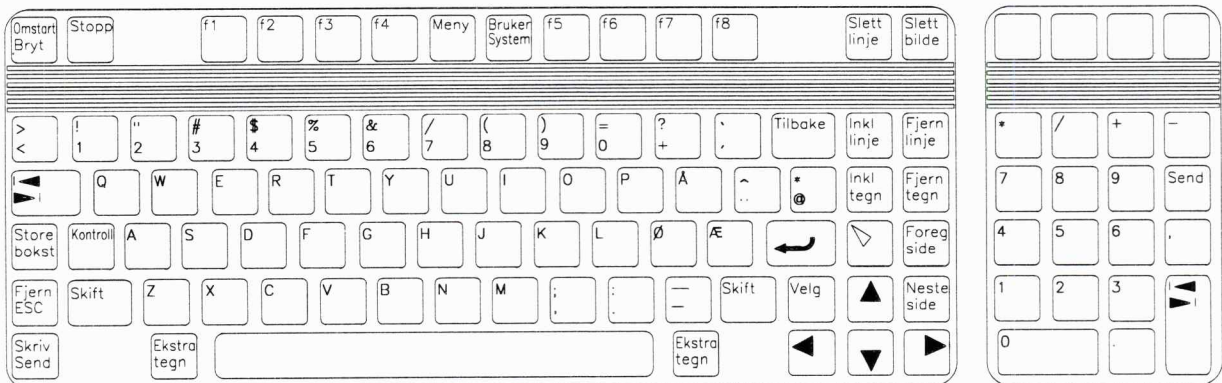
A detailed diagram of a standard computer keyboard layout, showing the arrangement of keys and their labels. The keyboard is divided into several sections: a top row with function keys (F1-F12), a second row with alphanumeric keys and navigation keys (Home, End, Left Arrow, Right Arrow), a third row with alphanumeric keys and navigation keys (Home, End, Left Arrow, Right Arrow), a fourth row with alphanumeric keys and navigation keys (Home, End, Left Arrow, Right Arrow), and a bottom row with alphanumeric keys and navigation keys (Home, End, Left Arrow, Right Arrow). The diagram is a black and white line drawing, showing the physical shape and arrangement of the keys.



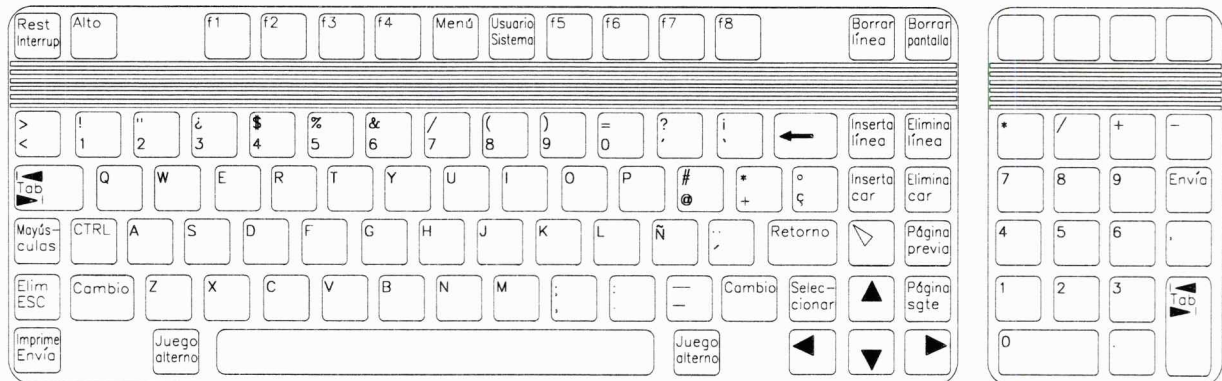
B-5



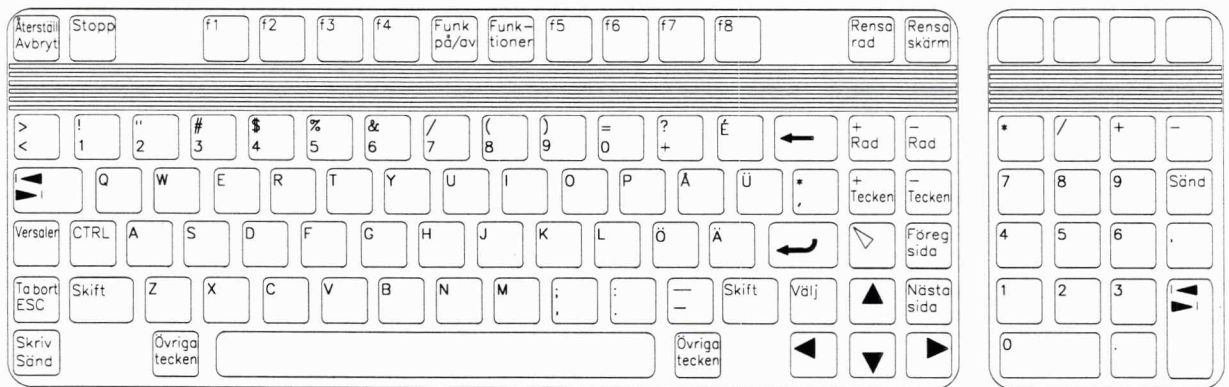
Latin American (Spanish) Keyboard



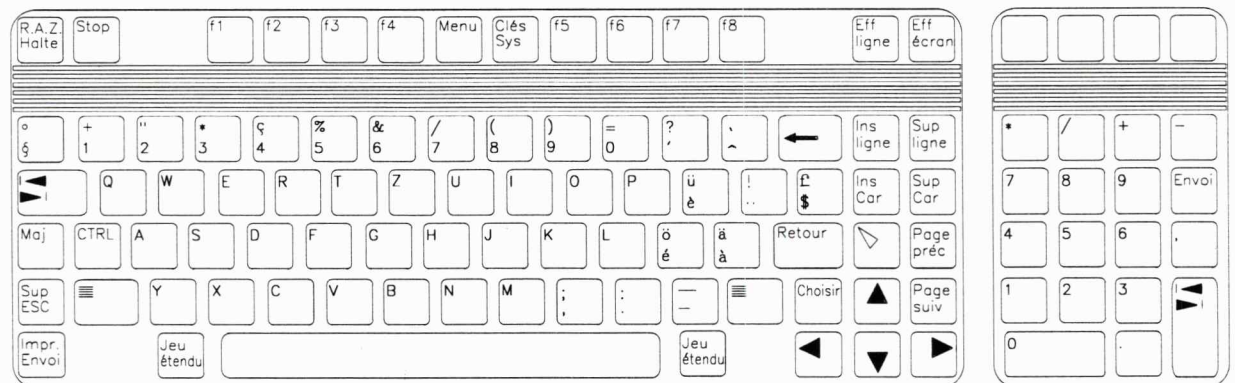
Norwegian Keyboard



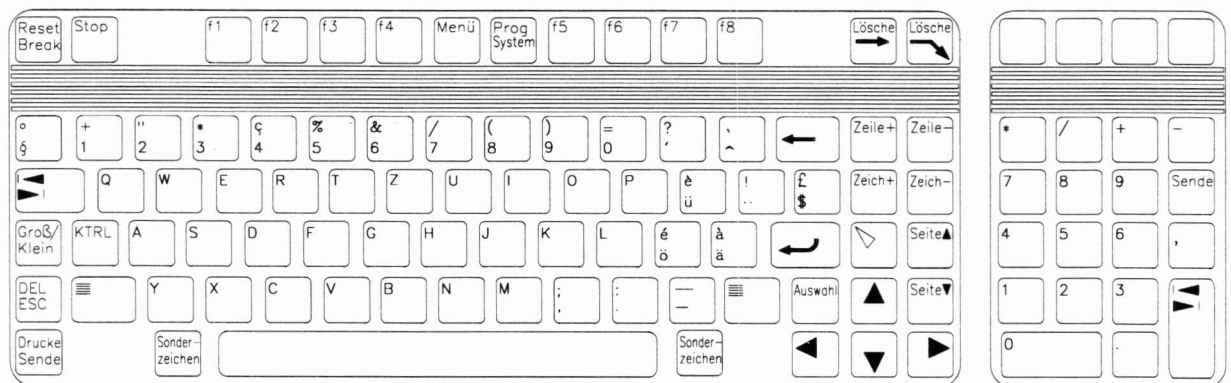
Spanish Keyboard



Swedish Keyboard



Swiss (French) Keyboard



Swiss (German) Keyboard

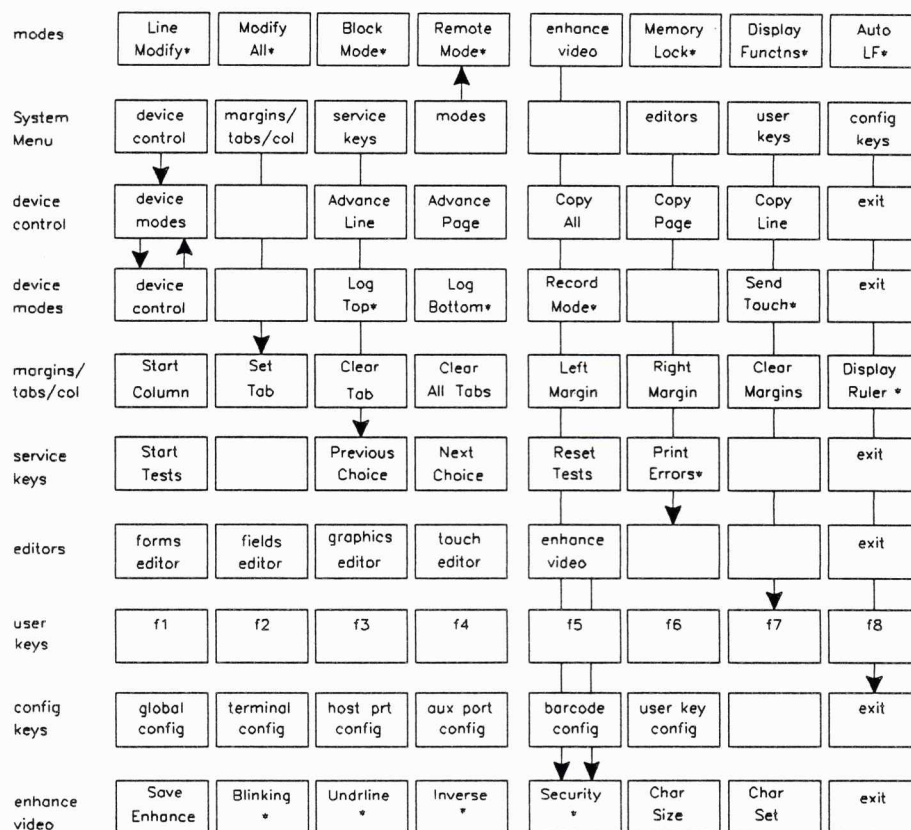
C

Appendix C Softkey Maps for System Softkeys

In exhibits C.1 through C.4, an asterisk (*) means that an asterisk appears on the softkey in question when it is engaged.

On any **enhance video** menu, the **[Save Enhance]** and **[exit]** keys return you to the menu from which the **enhance video** menu was selected.

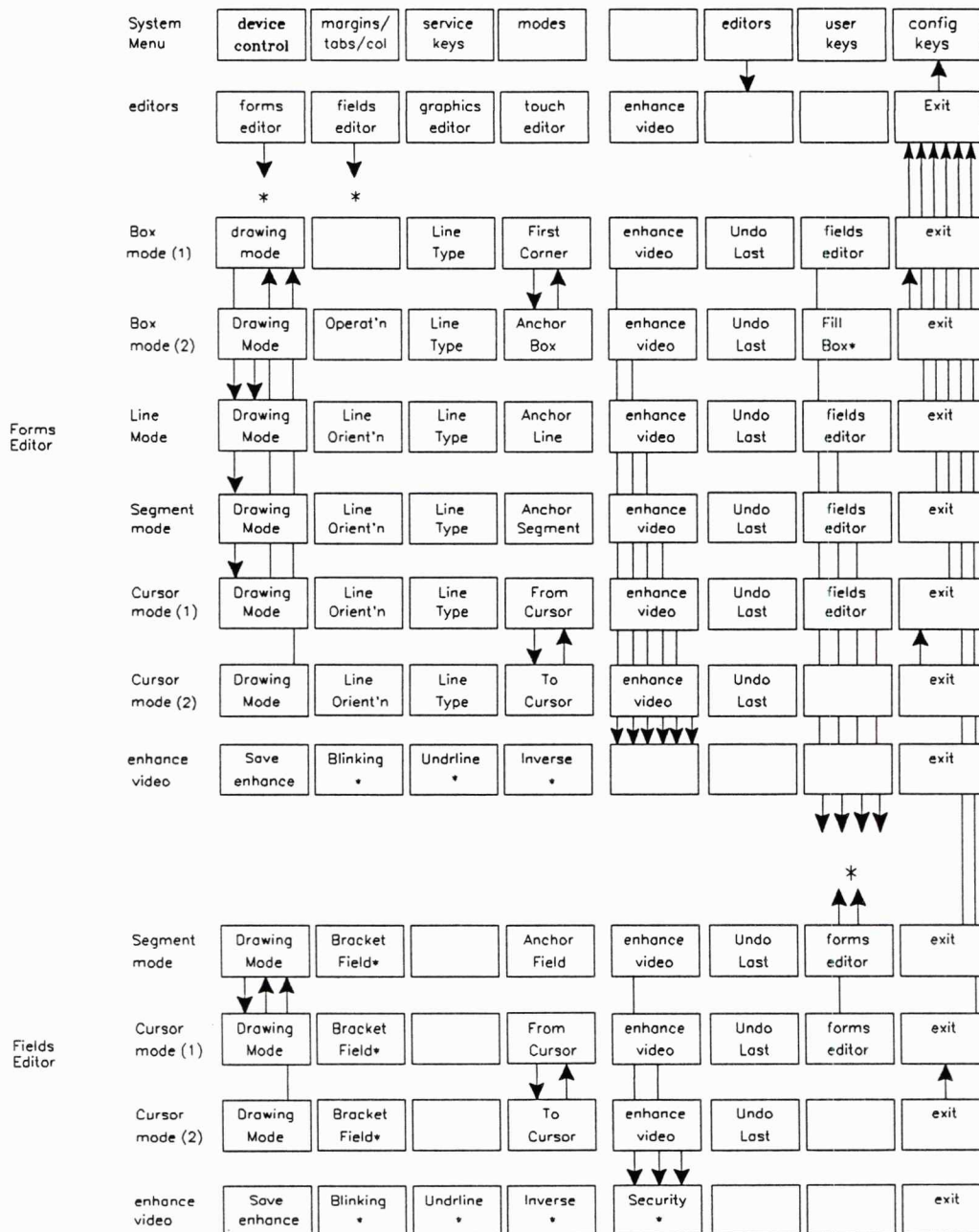
Exhibit C.1. Softkey menus accessed directly from System Menu



Except on the **enhance video** menu, all **[exit]** keys return you to the **System Menu**.

To access the **System Menu** from menus that have no **[exit]** key, press **[f]** on the keypad or **[System]** on the external keyboard.

Exhibit C.2. Forms and Fields Editor Menus



Keys marked [forms editor] or [fields editor] always take you to whichever mode of that editor was in use last.

Exhibit C.3 Touch Editor Menus

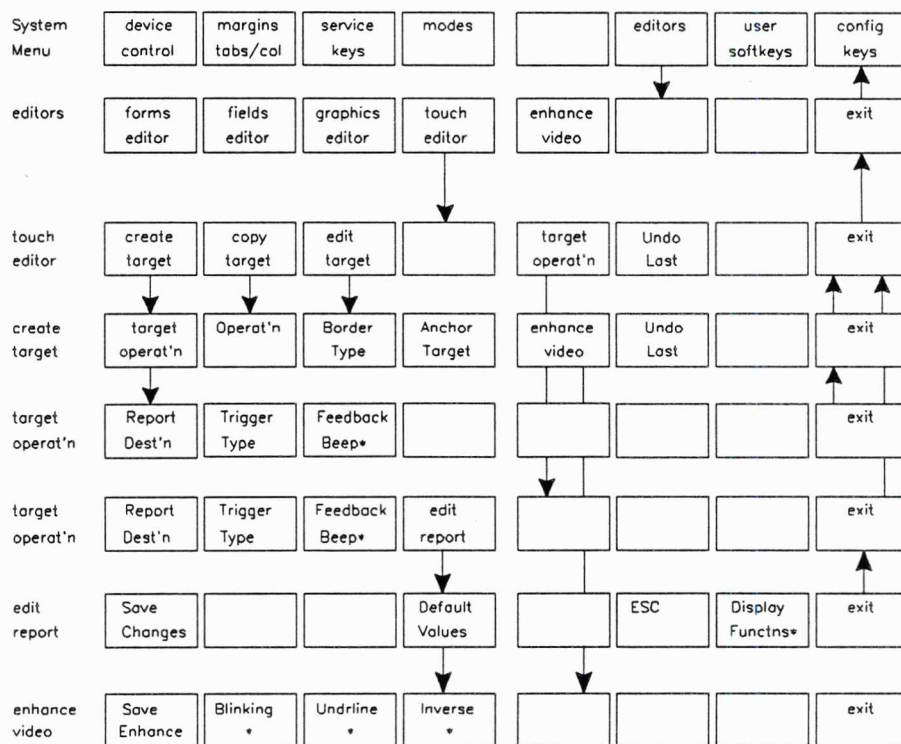
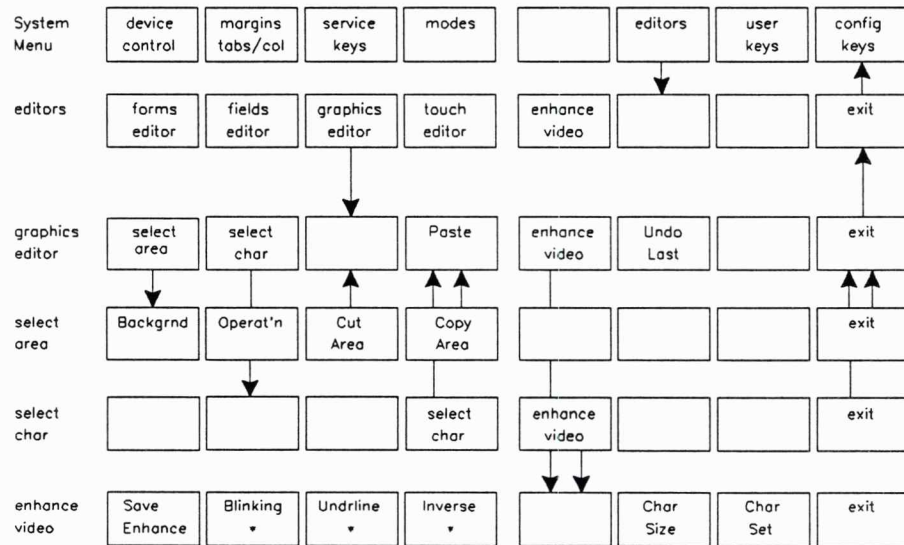


Exhibit C.4 Graphics Editor Menus



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Tel: (082) 241-0611
Yokogawa-Hewlett-Packard Ltd.
Towa Building
2-3, Kaigan-dori, 2 Chome Chuo-ku
KOBE, 650
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C,E
Yokogawa-Hewlett-Packard Ltd.
Kumagaya Asahi 82 Bldg.
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C,CM,E
Yokogawa-Hewlett-Packard Ltd.
Asahi Shinbun Daiichi Seimei Bldg.
4-7, Hanabata-cho
KUMAMOTO, 860
Tel: (0963) 54-7311
C,E
Yokogawa-Hewlett-Packard Ltd.
Shin-Kyoto Center Bldg.
614, Higashi-Shiokoji-cho
Karasuma-Nishiru
Shiokoji-dori, Shimogyo-ku
KYOTO, 600
Tel: 075-343-0921
C,E
Yokogawa-Hewlett-Packard Ltd.
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C,CM,E



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MIYAGI, 980
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C,E

Yokogawa-Hewlett-Packard Ltd.
Gohda Bldg. 2F
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Okaya-Shi
NAGANO, 394
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C,E

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NAGOYA, 450
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C,CM,E,M

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OSAKA, 532
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Telex: YHPOSA 523-3624
C,CM,E,M,P*

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27-15, Yabe, 1 Chome
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Yokogawa-Hewlett-Packard Ltd.
Motoshiro-cho Dai-ich Seimei Bldg. 1F
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Shinjuku-ku
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TOKYO, 180
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Gulf Computing Systems
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P

Photo & Cine Equipment
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SAFAT
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W.J. Towell Computer Services
P.O. Box 5897
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Suhail & Saud Bahwan
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Telex: 2894 MUSKO PK
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Calle Samuel Lewis, Ed. Alfa
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PANAMA 5
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Telex: 3483 ELECTRON PG
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LIMA 1
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Telex: Pub. Booth 25306 PEC PISIDR
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The Online Advanced Systems Corp.
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M

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Societe Africaine De Promotion

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Appendixes

